PREEMPTIVE ANALGESIA WITH IV PERFALGAN IN ELECTIVE CAESAREAN PATIENTS AND ITS EFFECT IN THE POSTOPERATIVE PAIN RELIEF

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Master of Surgery in Obstetrics and Gynecology

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ENDORSEMENT BY THE HOD, DEAN / HEAD OF THE INSTITUTION

This is to certify that the dissertation entitled, **"PREEMPTIVE ANALGESIA WITH IV PERFALGAN IN ELECTIVE CAESAREAN PATIENTS AND ITS EFFECT IN THE POSTOPERATIVE PAIN RELIEF"** is the bonafide original research work of **Dr. KAMALA SWARNAMANI** under the guidance of **Dr. REENA ABRAHAM, M.D, DGO,** Professor, Department of Obstetrics and Gynecology, P.S.G IMSR, Coimbatore in partial fulfillment of the requirement for the degree of Master of Surgery in Obstetrics and Gynecology.

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This dissertation is submitted to The Tamil Nadu Dr. M.G.R Medical University in fulfillment of the University regulations for the award of MS degree in obstetrics and gynaecology. This dissertation has not been submitted for award of any other degree or diploma.

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INTRODUCTION

Caesarean section – surgical method of delivering the baby which includes both elective and emergency caesarean sections has been increasing in the recent days globally both in developing and developed countries. Nowadays the evidence shows that the Caesarean section is the preferred method of delivering the baby. This global increase in the Caesarean section rates includes mainly obstetric indications and socioeconomic causes. The success of a surgical procedure relies on the coordination of many factors which includes adequate pain relief, rehabilitation and early ambulation, length of hospital stay, costs of surgery and satisfaction of the patient. Thus it is always important to have adequate pain relief postoperatively. [1]

In Caesarean section, after delivery of the baby, the patient goes for perioperative stress and acute postoperative pain which in future leads to chronic pain. Some studies shows that 30-40 % of Caesarean patients suffer severe postoperative pain which remains one of the cause for depression, fear and anxiety.[3] Hence these perioperative effects require different modes of analgesia including systemic and neuraxial analgesia. The interaction between the mother and the infant is impaired by different modes of analgesia. Therefore postoperative pain should be treated accordingly to what the patient perceives ideally.[2]

Postoperative pain relief is always important to prevent several adverse effects. Some of the adverse effects are stated below:

1) The discomfort of the patient
2) Impairment of early mobilization
3) Better interaction between mother and infant

4) Increased ability of the mother to take care of her infant and breast feed, indirectly decreasing the neonatal adverse effects due to lack of breast feeding
5) Decreased risk of thromboembolism
6) Healing of wound better
7) Recovery is faster
8) Decreased risk of developing heart and lung complications (pneumonia, heart attack)
9) Decreased risk of developing neuropathic pain
10) Inhibit noci-ceptive impulses
11) To blunt the response of Neuro-endocrine system to pain indirectly.

These adverse effects leads to prolonged hospitalization, decreased patient satisfaction, increased incidence of re -surgeries and re-admissions, affects hospital functioning and increased number of claims. In addition to these above facts, postoperative pain has undesirable effects on cardiac, pulmonary, urinary and intestinal functions which in turn causes longer hospitalization. Hence to avoid these adverse effects it is always better to have adequate pain relief.

The most effective method of pain relief in the postoperative period is to use various combination of drugs and techniques. Here are the commonly used medications to relieve postoperative pain- opioids, NSAIDS, COX -2 inhibitors. There are some newer techniques which has the effect in better pain relief such as preemptive analgesia, patient controlled analgesia, infiltrating local anaesthetics into the wound. This study mainly deals about preemptive analgesia and its effect in postoperative pain relief in elective caesarean section.

CAESAREAN SECTION:

The word Caesarean is derived from a latin word caedare meaning – to cut. The name was first used by James Guillimeau. The first documented Caesarean section was in the year 1020 AD. The anaesthesia and anaesthetics used in Caesarean section was employed in the nineteenth century after which the surgery came into more serious consideration. The father of modern Caesarean section, a German gynaecologist Max Sanger in the year 1882 introduced Classical Caesarean section. The lower segment Caesarean section was introduced by Osiander in the year 1805. After several modifications, Munro Kerr in the year 1926 made the first description of lower segment transverse uterine incision.

Since 1990, the global Caesarean section rate has increased by about 12.4% with the annual average rate increase by 4.4% (from 6.7 – 19.1%). The largest increase been America 19.4% (from 22.8% to 42.2%) , the lowest been Africa -4.5% (2.9% to 7.4%) and the rate in Asia increased by about 15.1%.(from 4.4 – 19.5%)[69]. The lower segment caesarean section has several indications – the commonest being – repeat Caesarean section, breech presentation, fetal distress and non- progression of labour.

The preoperative preparation for a caesarean section includes measures like correcting anemia or excluding it before the surgery. If the patient had acute blood loss before surgery, replacement with blood transfusion should be done before surgery. Always ideal to do blood grouping and typing, cross matching prior to surgery. Gastric emptying is usually advised before surgery due to the risk of aspiration of gastric contents leading to aspiration pneumonitis during induction of anaesthesia. H2 receptor antagonists is given to reduce the risk of aspiration pneumonitis mainly to reduce gastric volumes

ANATOMIC CHANGES IN PREGNANCY:

The changes normally occurring in pregnancy has an effect in the anaesthetic techniques used in pregnancy. Due to the enlargement of the uterus, the compression of vena cava occurs which indirectly results in engorgement of epidural veins. Unintentionally , the epidural catheter placement made intravascularly leading to injection of local anaesthetics into the veins where the vertebral foraminal veins lies in contiguous with the epidural veins are enlarged and so obstructs anaesthetic pathways during the administration of analgesia epidurally. Due to the enlargement of epidural veins, displacement of the CSF from the thoracolumbar region of the subarachnoid space occurs because of the increased intra – abdominal pressure in the pregnancy. Usually lower dose of spinal anaesthesia is required in pregnancy mainly due to this displacement. The requirements are less also due to the lower specific gravity of CSF in pregnant women. Three changes occur commonly in pregnancy: the line which joins the iliac crests occupies a more cephalad position to the vertebral column i.e it crosses commonly at the L3 – L4 interspace than the L4 – L5 interspace , the pregnant women has usually narrow interspace and the third thing is that lardosis is exaggerated and kyphosis is reduced.

ANAESTHESIA:

Generally two types of anaesthesia used in caesarean section – General anaesthesia and Spinal anaesthesia. Anaesthesia complications pertaining to general anaesthesia is mainly major complications due to intubation failure, failed ventilation and aspiration of gastric contents. Therefore usually general anaesthesia is indicated in necessary situation. If the patient is planned for general anaesthesia , pre oxygenation and during induction, prophylaxis with antacid with the application of cricoid pressure is indication for the prevention of mendelson syndrome. Common indications for general anaesthesia includes- acute hypovolemia for the mother, severe

fetal distress, in case of failure of spinal anaesthesia, coagulopathies for the mother and refusal for spinal anaesthesia. Contraindications for general anaesthesia includes- difficult airway,in case of malignant hyperthermia, severe asthmatics.

Nowadays, major number of caesarean sections are done under spinal anaesthesia. As a alternative to general and regional anaesthesia, local anaesthesia is considered as a effective and a safe alternative. The WHO includes local anaesthesia in its manual which is evidence based for caesarean section and only for trained and experienced person is recommended. Contraindications includes- severe preeclampsia and eclampsia , obesity and patients allergic to lignocaine and in the hands of inexperienced surgeon.

Preemptive Analgesia

Anti-nociceptive treatment mainly prevents establishment of afferent input altered processing which is responsible for amplification of postoperative pain. The aim of this intervention is to mainly prevent the modulation of pain in central nervous system which in turn results in increased amplification and excitability responses to normal inputs. Preemptive analgesia is mainly the treatment given before surgery and preventing sensitization centrally and peripherally due to pain transmission caused by incisional injuries thereby helps in prevention of development of chronic pain and postoperative pain immediately. This analgesia block pain signal originating from the surgical wound initially from the time of incision.[4]

Therefore it is seen that Preemptive analgesia has an important role in reducing pain in the postoperative period. However the results of some studies shows that the Preemptive analgesia given before and after incision has no major difference in the relief of postoperative

pain and also in convalescence time .Therefore it is difficult to come to a conclusion in the effectiveness of Preemptive analgesia.

This study is about analyzing the effectiveness of preemptive analgesia in elective Caesarean section with IV Perfalgan in the postoperative period.

AIM AND OBJECTIVES

AIM OF THE STUDY:

To assess the effectiveness of preemptive analgesia with intravenous Perfalgan in patients undergoing Elective Caesarean section in the postoperative pain relief.

OBJECTIVES:

The main objective of the study is to assess:

- the time of first analgesic requirement in the postoperative period
- postoperative pain scores at 0, 30 mins, 2 hours, 4 hours, 6 hours , 12 hours and 24 hours after surgery by visual analog scale

REVIEW OF LITERATURE

History of Preemptive Analgesia:

The concept of prevention of postoperative pain was first introduced by Crile in 1913 who suggested that simple changes in the treatment timing has significant effects in the relief of postoperative pain[5]. In 1983, Woolf paved the concept of preemptive analgesia who describes in experimental studies for a central component of postoperative surgical injury pain hypersensitivity. His studies suggested that in a surgical injury, analgesia treatment timing was the most significant issue [6]. Several experimental studies subsequently showed evidence that before surgical injury, various anti-nociceptive techniques were more effective in treatment of postoperative sensitization centrally when compared to analgesia given post injury [7]. Terms used commonly with preemptive analgesia- **Central sensitization**-pain hypersensitivity which results from postsurgical injury changes persistently

Central Hyperexcitability:

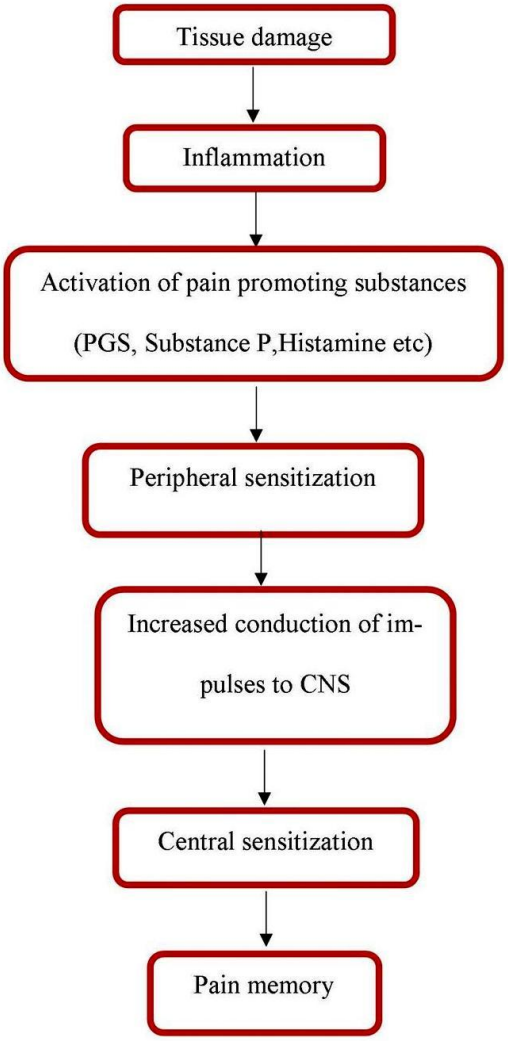
After tissue damage, exaggerated and prolonged responsiveness of neural fibres to normal afferent input from the injury site. Reviews from some studies have shown that preemptive analgesia is effective [8], while few others have concluded that the effectiveness of preemptive analgesia is only for certain drugs [9] and some others have shown no beneficial effect for any drug[10]

Rationale Behind Preemptive Analgesia Scientifically:

Noci-ceptors -Free endings of primary afferent neurons(peripheral nerves) detects noxious or painful stimuli to the body. Noci-ceptors are subdivided into Adelta fibres

(myelinated) and C fibres (unmyelinated). The main action of these noci-ceptors is they act as transducers in the site of noxious stimuli to convert thermal, mechanical, chemical energy into electrical energy . Dorsal horn of central nervous system receive this electrical energy which is generated from the noci-ceptors. **First Pain-** sharp rapid pain response which is triggered by mechanical and thermal injury detecting Adelta myelinated noci-ceptors. **Second Pain-** delayed burning pain response which is triggered by mechanical and chemical stimuli detecting C fibres.

During surgery, once the tissue damage occurs leading to release of inflammatory substances in the circulation which are commonly pain promoting substances like substance P, histamine and prostaglandins etc. which in turn results in acute inflammation. The release of these pain promoting substances leads to peripheral sensitization. Due to peripheral sensitization, increased conduction of impulses mainly to the central nervous system occurs leading to sensitization centrally. Therefore the combined peripheral and central sensitization leads to long term pain memory.



PAIN PATHWAY PICTURE

In brief, whenever pain due to tissue damage occurs ends up in activation of both central and peripheral pathways resulting in prolonged somatosensory modulation. Evidence from the studies shows that it is possible to preempt this increased conduction of impulses from the noxious stimuli to the central nervous system than treating once the pain has already established[11]

OBSTETRIC PAIN PATHWAYS:

During labour, due to the changes in the cervix and lower uterine segment, transmission of pain is by visceral afferent nerve fibres which accompanies the sympathetic nerves fibres and enters the spinal cord at T10 and L1 segments and due to the distension of the perineum , pain is transmitted by somatic nerve fibres that enters the spinal cord at S2 – S4 segments.

PAIN PATHWAY AFTER CAESAREAN DELIVERY:

Pain after caesarean section has both somatic and visceral components. Somatic pain arising from the noci-ceptors has both cutaneous and deep components which are transmitted within the anterior division of spinal nerves usually T10-L1. Additional noci-ceptive pathways transmits pain and level of anaesthesia is at the level of T4 . The pfannenstiel incision in the caesarean section comes under the T11 to T 12 dermatomes. Visceral uterine noci-ceptive stimuli return through afferent nerve fibres that ascend through inferior hypo-gastric plexus and enter the spinal cord through T10-L1 nerves . Visceral pain gets transmitted as high upto celiac plexus.

Hence an ideal post caesarean analgesic regimen should be cost effective, simple to implement, should provide high quality pain relief and also lower incidence of side effects and complications. This regimen should not interfere with the maternal care of the newborn or with breast feeding, minimal drug transfer into the breast milk and consequently minimal adverse effects on the newborn.

Preemptive Analgesia:

Anti-nociceptive treatment that is started before the surgery which helps in preventing establishment of afferent input induced altered central nervous system processing from the site of injury. The main aim of the preemptive analgesia is the prevention of sensitization centrally. In the newer definition, atleast two essential requirements should be met in the effectiveness of preemptive analgesia. The first remains paramount establishment of analgesia effectively. Presence of inadequate preoperative anti-nociceptive treatment should not be included in the definition of preemptive analgesia. Preemptive does not just mean the treatment given before surgery. Establishment of block which is not sufficient administered before surgery should not be considered as preemptive treatment.

In the current days definition, there is the second requirement which provides the important concept that in the postoperative period, administration of noci-ceptive treatment before surgery should block and inhibit the inflammatory mediators and should extent into the period of post tissue injury which occurs due to the inflammation induced postoperatively. Pain sensitization centrally may not be prevented if the preemptive treatment is terminated during the inflammatory phase in the post injury state.

Recently, clinical trials shows that the blocking effect of noci-ceptive input which is given after surgery (i.e) after the establishment of inflammatory mediators may not show significant benefit clinically . In some trials, there is delay in central sensitization and onset of postsurgical pain and the prevention is not effective. Therefore simple change in the analgesic treatment timing have significant effects in relief of postoperative pain. Based on experimental observation , it is shown that intervention of analgesics is effective when noxious stimuli period

is included and not just the administration in the postoperative period. These experimental observations came into clinical testing recently because the timing of administration of preemptive analgesia remains the most important issue in the prevention of postoperative pain.

Abdominal surgical procedures and pelvic surgeries generally involve opening of the peritoneum. These surgical procedures anticipate postoperative pain scores more than 6 and generally causes longer postoperative pain usually lasting for 5 days. In the postoperative period immediately after surgery, no drugs for pain relief can be administered because this process of administration of analgesia drugs can lead to increased absorption of drugs and analgesic property of the drugs will be decreased.

Severe postoperative pain remaining persistently after surgery is one of the most significant complication which refers to pain that persists for more than three months after surgery. There are many factors which predisposes to this persistent postsurgical pain which leads to chronic pain such as obesity, physical disability before surgery, increased duration of surgical techniques used for surgery and implants. These factors have significant association with the extent of surgery and inflammation induced due to the surgery. Therefore it is always necessary to use multimodal analgesia according to the intensity of pain in visual analog pain scale.

Preemptive analgesia when used for a surgery can be a single drug or a combination of drugs. Although many experimental work states that preemptive analgesia has a significant role in reducing pain postoperatively, clinical studies is been inconclusive. Some authors shows that there is no major difference between pre incisional and post incisional treatment (i.e) it is not statistically significant and has limited clinical implications. There is also no major difference in

convalescence time as per some studies. Therefore it is difficult to come to a conclusion in the effectiveness of preemptive analgesia.

In the year of 2001-2004, atleast 30 studies of comparison of various regimens of preemptive analgesia and preventive analgesia in treatment of postoperative pain reveals that there is some reduction in preventing the pain postoperatively and also there is a decrease in analgesia requirements in the postoperative period in a total of 13 studies [12 -14] and in 17 other studies no major difference in the postoperative pain relief period and need for analgesics[15,16]

Preemptive analgesia –effect in chronic pain – it has been shown that preemptive analgesia has a role in reducing the development of chronic pain .Obata H et al [17]compared the effect of preemptive and postincisional treatment on chronic pain. Postoperative pain was significantly reduced in the preemptive group when compared to preventive group even at 6 months postoperatively.

Moiniche et al., [10] in a meta -analysis of 80 trials in the year 1983 -2000 , suggested that postoperative pain scores (VAS) in the first 24 hours after surgery in both preemptive and preventive group was similar and no improvement was found with preemptive analgesia. The evidence concluding the effect of preemptive analgesia in patients undergoing surgery does not have significant effect in the relief of pain postoperatively and has minimal side effects and rescue analgesics has been used in order to halt stress intra operatively . It is also shown that the influence of variables in the VAS pain scores may not be considered as a primary measure in studying the effect of preemptive analgesia. Katz et al.[18], shows that in the evaluation of effect of preemptive analgesia , various psychological variables have effect in experiencing the pain in varying duration.

Depending upon the needs of the patient, a wide range of drugs has been used in the concept of preemptive analgesia as a treatment of postoperative pain. These are the following drugs which has been used in different ways and in different routes- regional anaesthesia, peripheral blocks, parentral and oral NSAIDS, sublingual opioids.

REGIONAL ANAESTHESIA:

In the practice of obstetric anesthesia in the U.S from the year of 1992, the anesthesia for caesarean deliveries is done under spinal or epidural anesthesia. The main advantage of regional anesthesia is the avoidance of depressive effect of some anesthetic drugs, the mother will be awake during the surgery, reduced risk of aspiration of gastric contents, reduced blood loss when compared to general anesthesia. The main disadvantage is hypotension due to the sensory block of regional anesthesia which is up to T4 dermatome, therefore pre hydration therapy and proper positioning is needed. Block upto T4 is required due to traction on the peritoneum and uterine exteriorization. Usually pregnant women required less local anaesthetics when compared to non pregnant women.

Subarachnoid block is commonly administered regional anesthesia for caesarean delivery because of rapid onset of action. Commonly used drugs are 5%lignocaine,1% tetracaine or 0.75% bupivacaine. Nowadays bupivacaine is the widely accepted drug for caesarean deliveries.

Despite an adequate dermatome level, some women may have visceral discomfort during uterine exteriorization and traction on the uterine peritoneum. For the improvement of perioperative analgesia, fentanyl can be added to the bupivacaine. Usually 0.5% bupivacaine (1.8ml) and 0.4 ml fentanyl (20 mcg) been used as a standard spinal anesthesia regimen

BUPIVACAINE:

It is a amide local anaesthetic and the most commonly used drug in the Caesarean section. This drug rarely crosses the placenta due to high protein bound.

Recent studies which has used regional anesthesia preemptively has a positive effect in the postoperative pain. These are drugs which are used mainly to stabilize the membrane .The mechanism of action of these drugs is to prevent the influx of sodium through the sodium channel which is voltage gated. Mostly these drugs are used in combination with other drugs such as opioids. Mostly these drugs are used in infiltrating the wound, nerve blocks given peripherally, neuraxial blocks. Coughin et al [19] conducted 26 studies in the laparoscopic surgeries in a view to study the effect of timing of regional anesthesia in the treatment of postoperative pain .The results shows that reduction of postoperative pain is more with regional anesthesia been given preemptively. It was also shown that the effect of preemptive analgesia in controlling postoperative pain when given intraperitoneally. The main mechanism of action behind this is its influence on cytokine response. So it has a effect in the immune function in the perioperative period and also in the prevention of postoperative pain. Yukaneaa et al [20] compared the effectiveness of morphine given through continuous epidural infusion, Diclofenac sodium, subcutaneous morphine. It is seen that in Diclofenac group, VAS scores was comparatively less when compared to other two but the first and subsequent analgesic requirements was more in Diclo group and morphine has more side effects when compared to Diclo group. In a meta-analysis, it is found that epidural analgesia has better analgesic effect when compared to parentral opioids. Tverskoy et al [21] conducted a double blinded study comparing the effects of General anaesthesia, local infiltration of 0.25% bupivacaine combined with general anesthesia and spinal anesthesia in a inguinal herniorraphy surgery in a total of 36

patients .Postoperative pain was assessed after 24 hrs,48 hours and 10 days in terms of incisional pain constantly, pain associated with pressure and movement. The pain intensity was significantly reduced in the postoperative period with the use of anesthetic been instilled locally. But the drawback of this effect is that it lasts only for 24 hours but the pain associated with pressure is decreased in combined group with GA and local infiltration, the effectiveness of LA is more than SA because SA has shorter duration of action.

Sisk et al[24] studied the preemptive effect of giving naproxen sodium 550 mg preoperative and postoperatively in a dental surgery and the reports was found to be non supportive. Pyrle et al [25] in a study of patients undergoing abdominal hysterectomy and myomectomy studied the effects of 0.5% bupivacaine by infiltrating in the lumbar epidural space before and after general anesthesia for a period of 24 hours and found that it is not effective in the postoperative pain relief which is assessed by visual analog pain scores and analgesic consumption was similar in both the groups. Dakin et al [26] studied 38 patients in abdominal hysterectomy surgery and spinal bupivacaine was given prior to induction in one group and after the extubation in other group. Postoperative pain scores and morphine consumption was followed. The pain scores at 0, 6, 24 hours was similar in both the groups and consumption of morphine was also similar.

Pasqualucci A, et al [27] observed in a group of 123 patients in a surgery laparoscopic cholecystectomy who received 0.5% bupivacaine before or after the surgery and other group of patients as placebo and one group received saline before and after the surgery. Pain scores was observed at 0, 4, 8,12 , 24 hours . He stated that pain scores was unforeseenly decreased in local anaesthetic group who received after surgery compared to placebo group but the group who received local anaesthetic before surgery does not found any significant difference in the pain

scores and analgesic requirement after surgery. Johansson B[28] observed pain scores postoperatively in a group of 131 patients undergoing elective inguinal hernia surgery with the local anaesthetic ropivacaine infiltrated locally in the incision site before the surgery with placebo. The postoperative wound pain was assessed at rest and during movement, and threshold of pain tolerance was assessed at 3,6,10,24 hours and upto 7 days after surgery and the degree of analgesic consumption was also assessed. The assessment was mainly by questionnaires which were asked before and after the surgery. Postoperative pain scores was significantly reduced in the local anaesthetic groups after 3 hours and after 6 hours for which the p value (<0.05) .The pain was reduced during mobilization and when maximum pressure applied to the patient in the ropivacaine group compared to placebo group. The time for first analgesic requirement was also delayed in the ropivacaine group compared to the other. Hence ropivacaine is considered an excellent drug which has a significant effect in reducing postoperative pain immediately but its effect is doubtful in the chronic pain. Bugedo GJ et al [29] in a prospective study of group of adult patients who was undergoing inguinal herniorraphy surgery with spinal anaesthesia with ilioinguinal- iliohypogastric nerve block percutaneously with 0.5% bupivacaine for the prevention of postoperative analgesia . There was less pain scores at 3,6, 24 and 48 hours after surgery and also the analgesic requirement was also less in the bupivacaine group and also it appears to be safer and simpler method in preventing longer lasting analgesia postoperatively.

Aguilar et al. [30]studied in a group of 45 patients who undergone thoracotomy surgery with the bupivacaine drug administered epidurally. Patients was divided into 3 groups – one receiving 0.5% bupivacaine (8ml) before surgery, and other group received bupivacaine after surgery. Epidural analgesia requirements postoperatively was studied until 43 hours and upto

3months and there was no significant differences between the two groups thus favouring the study unsupportive

Opioids:

Although the effectiveness of opioid analgesia is limited in the field of preemptive analgesia, its efficacy is predominant when compared to limitation.Richmond et al[22] compared the effectiveness of morphine 10mg iv given before induction and at the time of closure of peritoneum in the abdominal hysterectomy surgery and the patients was followed upto 24 hours after surgery and found that morphine given before induction reduces the postoperative pain for upto 24 hours

Wilson et al [23] in the abdominal hysterectomy surgery compared the effect of Alfentanil given before induction and at the time of incision and the pain scores was followed upto 24 hours. The results was found to be same in both the groups. Moiniche et al[31] compared the effects of combined epidural bupivacaine and morphine in a group of 42 patients in the total knee or hip arthroplasty for a period of 48 hours postoperatively and in the other group conventionally with opioid given intramuscularly and oral acetaminophen. The postoperative pain scores was assessed for a period of 48 hours. The scores was comparatively less in the case group compared to control group and also the requirement of morphine was less in the epidural group when compared to control group.

Campigilia et al[32] did a study to compare the efficacy of morphine sulphate and midazolam when given sublingually as a preemptive analgesia in abdominal surgeries done electively. In both the groups general anesthesia with Sevoflurane and fentanyl given. Totally 29 patients was allotted who received morphine sulphate and midazolam sublingually and

postoperative analgesia was given with acetaminophen in case group and IV morphine in control group.

Pain scores was analyzed using visual analog scale. Analysis of results was using student t test. The visual analog scores was significantly lower in the case group when compared to control group at 4,6,24 hours and the patient controlled analgesia was also low in the case group when compared to control group. The side effects was more or less similar in both the groups.

Kilikan et al [33] evaluated the efficacy of IV morphine when given pre-emptively and its effect in the postoperative analgesic requirement and also in the alteration of stress response after surgery. Totally three groups each including 20 patients were included in the study. Group 1 receiving morphine after induction and group 2 receiving morphine after closure and group 3 receiving placebo. In the postoperative period, as a marker of stress response – cortisol levels are measured and also the total morphine requirement after surgery was also calculated ,postoperative morphine consumption was significantly lower in the preemptive group when compared to other groups but the postoperative cortisol levels were similar in all the groups. Therefore the results suggests that preemptive administration of morphine has significant effect in the reduction of postoperative morphine consumption but it does not have any effect in the reduction of postoperative stress response.

Esmaoglu et al [34] compared the effects of fentanyl given epidurally before and after incision during elective abdominal surgeries. Two groups were allotted which includes forty patients each before general anaesthesia induction. Patients in group A received 100 microgram fentanyl through the epidural catheter before the incision made in the surgery and group B receive fentanyl before the end of surgery. The postoperative fentanyl consumption was assessed

at 2, 4, 8,12, 24 hours. It was found to be similar between the groups. The postoperative pain scores at 0,2,4,8,12, 24 hours was also found to be similar in both the groups. Therefore the end results of this study states that fentanyl when given epidurally before any elective abdominal surgeries as a preemptive drug has no significant effects in the postoperative pain relief and consumption of fentanyl in the postoperative period.

Ozcengiz D et al [35] compared the effects of caudal morphine and tramadol administered before the hernioraphy in a group of children and the requirement of Sevofluorane in the postoperative period. There were three groups in the study. One group receives tramadol caudally before surgery and one group receiving morphine caudally before surgery and the last group receiving caudal morphine after surgery and the postoperative Sevofluorane requirement was assessed in all the groups along with pain relief period. It was found that postoperative Sevofluorane requirement was significantly lower in the morphine group when compared to tramadol group but the pain scores was similar in all the groups. The postoperative complications such as vomiting, nausea was also similar in all the groups.

Mansfield et al [36] did a study in the preemptive analgesia in a group of 60 patients undergoing total abdominal hysterectomy with bilateral salphingoopherectomy . Two groups were divided – each 30 patients in which every patient receive Alfentanil 75 micro gram before and after induction of general anaesthesia .The postoperative pain scores was followed upto a period of 24 hours which was found to be more in the control group when compared to treatment group .But the efficacy of Alfentanil is limited in preventing all noci-ceptive input to the central nervous system and the maintanence was poor in the postoperative inflammatory period .The consumption of morphine was also more in the control group compared to treatment group. Akuralei et al [37] included 41 patients in abdominal hysterectomy surgery divided into two

groups were assigned to receive Sulfentanil 50 micrograms through epidural catheter in the lumbar region before and at the end of surgery. The result of this study suggests that consumption of Sulfentanil over the first 72 hours was significantly lower in the preemptive group when compared to control group and also noted that consumption of Sulfentanil was particularly lower between 8^{th} and 16^{th} after surgery. Patient satisfaction was also good in the pre -emptive analgesia group when compared to the other group. The study also noted that there was median decrease in the cortisol and ACTH levels in the postoperative day 1 in the case group when compared to control group. The local wound sensitivity of pain was also lesser in the prior group particularly in the first 4 days of postoperative period. Therefore the conclusion of the study is administration of sulfentanil preemptively through epidural catheter has short term effect in the postoperative period and have reduced sensitization of pain in the wound and stress hormone response in the postoperative period after the abdominal hysterectomy surgery.

Multimodal analgesia:

The analgesic effect is increased when more than one mode of analgesia is used . But there are few studies related to multimodal analgesia. RoseG OP et al [38] evaluated in the arthroscopic ACL repair surgery with preemptive administration of multimodal drugs- ketorolac, Ropivacaine given intra-articularly and femoral nerve block given 15 minutes surgery and after surgery. In the post anaesthesia care unit, verbal pain scores was assessed at 1, 3, 7 hours and iv patient controlled analgesia with consumption of morphine was also recorded in the postoperative period. The verbal rating pain scores was significantly lower in the group 1 when compared to other groups. There was no significant difference in pain scores in the day 1,3,7 days postoperatively. In the group 1,the postoperative morphine consumption was also significantly reduced than the other groups. Holthusen H et al [39] studied IV preemptive analgesia with noci-ceptive drugs such as morphine, ketamine, clonidine given before and after surgery. Its a double blinded surgery in the transperitoneal tumor nephrectomy. In a group of 30 patients, general anaesthesia was used. Patients in case group were alloted to receive morphine, ketamine and clonidine 15 minutes before surgery and after surgery. Patient controlled analgesia with opioid piritramide was used for postoperative analgesia. Postoperative pain scores was assessed at rest and during movement by visual analog scale in a period of 48 hours. The results of this study shows that there was no significant difference in analgesic requirement in the postoperative period and the pain scores was also similar in both the groups.

NMDA Receptor Antagonist:

The efficacy of NMDA Receptor Antagonists (ketamine) as a preemptive drug is limited to prevent sensitization centrally following any surgery

Silva EP et al [40] studied the effect of ketamine when given as epidural injection in the inhibition of cytokine production before the surgery and reported that the ketamine when given epidurally before incision of skin in surgeries reduces the postoperative pain for 12 hours after surgery when assessed by visual analog scale and also found that the administration of ketamine does not have any effect in reducing the concentration of cytokines. Nesek-Adam V et al [41] evaluated in the laparoscopic cholecystectomy surgery with preemptive administration of Ketamine and Diclofenac and its effect in the postoperative pain relief period. The pain scores was significantly less in the combined effect of both ketamine and Diclofenac but not in the group who received only Ketamine before surgery. A meta-analysis was conducted comparing the effect of ketamine and dextromethorphan as a pre-emptive drug in a group of 8 trials. The postoperative pain scores which was assessed by VAS pain scale was significantly lower in one trial in which dextromethorphan was used. The postoperative analgesic requirement was also lower in dextromethorphan group in about 3 trials and was not statistically significant in other 5 trials. The results of this study shows that dextromethorphan has some effect in the relief of postoperative pain relief period when compared to ketamine when used as a preemptive effect.

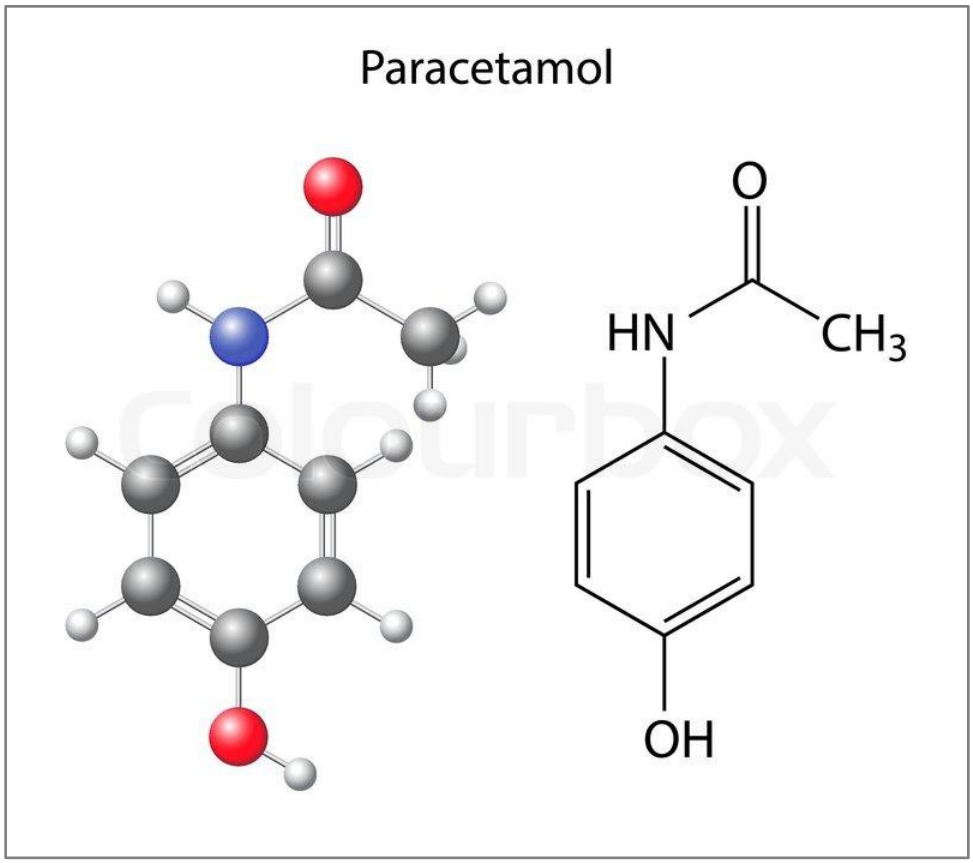
PARACETAMOL:

Paracetamol (acetaminophen; N-acetyl-p-aminophenol) is a derivative of aniline which is a safe and better tolerated drug with proven efficacy as analgesic. The effects of IV Paracetamol starts from central nervous system and IV administration provides rapid and when given intravenously reaches its therapeutic plasma levels very soon. In india IV Paracetamol has been used and available for the past few years.

Paracetamol is an analgesic and antipyretic medication which exerts its analgesic effects mainly by inhibiting prostaglandin synthesis centrally and has only minimal effects peripherally. It is safest and cost effective non opioid analgesic. Oral Paracetamol is been available for postoperative pain management for more than a century. Nowadays IV Paracetamol is used as a common analgesic for many surgical procedures.

Intravenous Paracetamol is the first in the class of non- opioid , non –NSAID analgesic. IV Paracetamol is found to be safe and efficacious parentral analgesic from minor outpatient procedures to major surgery. It has the potential to provide significant therapeutic level in the treatment of acute postoperative pain.

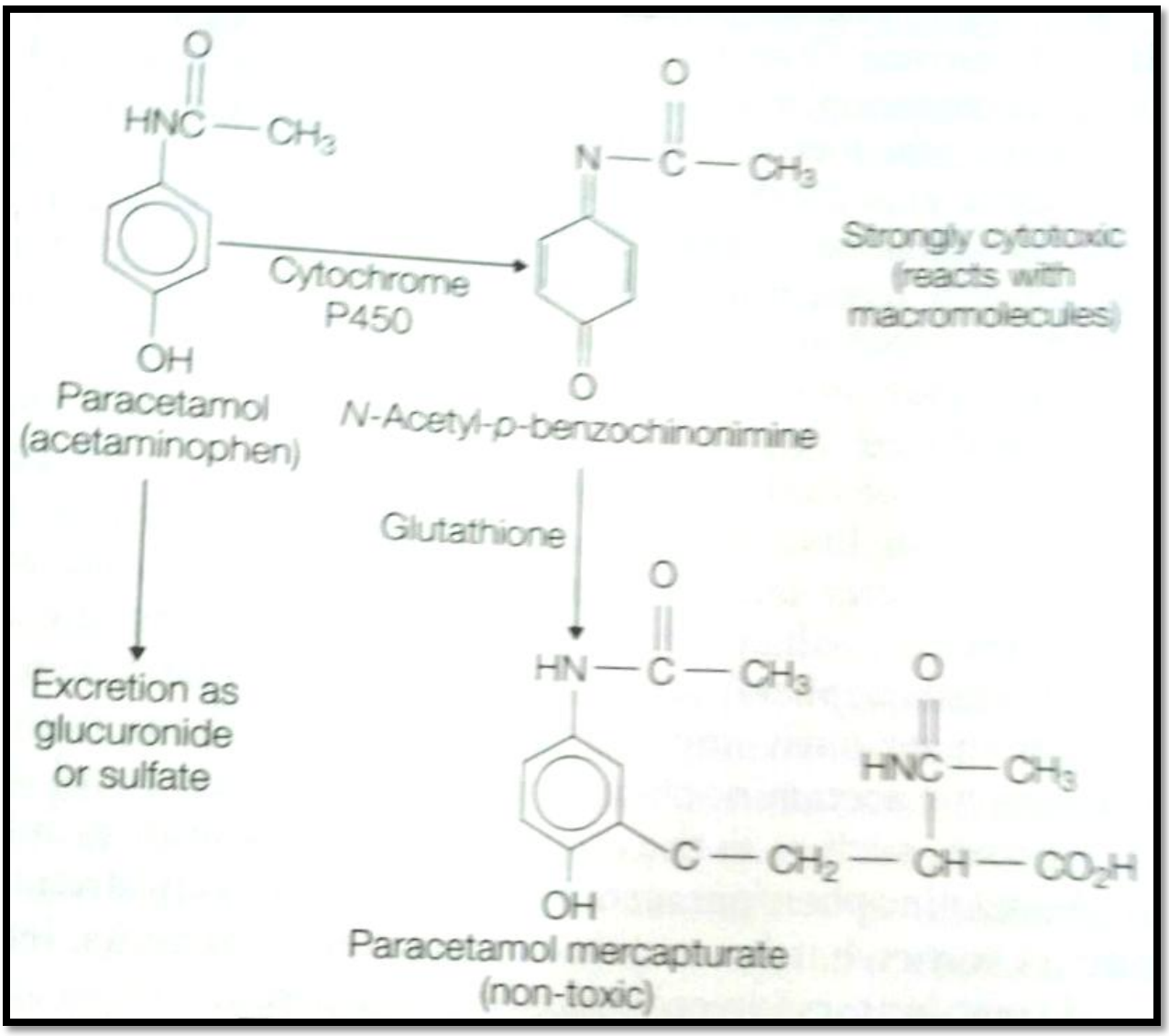
Chemical formula



After administration of Paracetamol , the peak levels reached in 1-1.5 hours. The half life is about 4 – 6 hours. There is about 5 – 50 % binding of the drug to the plasma protein. The maximum dosage of the drug is about 1- 6 g. The important difference between NSAIDS and Paracetamol is that Paracetamol does not have an adverse effect on platelet function or gastric mucosa and weak anti-inflammatory effect when compared to other NSAIDS. The drug is metabolized in the Liver at therapeutic doses, most of the drug is metabolized in a phase II reaction and excreted as glucuronide sulfate. At higher doses, the enzymes become saturated and is metabolized through P450 dependent mechanism which leads to the formation of N-acetyl –p-Benzoquinone imine , highly cell toxic metabolite . This can initially be detoxified through glutathione dependent step to acetaminophen mercapturate . At higher doses, the glutathione becomes exhausted and the metabolite now reacts with macromolecules inhepatocytes which leads to acute liver failure.

Paracetamol is the widely accepted drug as an analgesic and antipyretic in all the three trimesters during the antenatal period and also in the postpartum period during breast feeding. This drug crosses the placenta but when used in therapeutic doses it is safer both for the mother and the fetus. It is nowadays very feasible to use due to its availability in IV form. The common adverse effects with other NSAIDS like bleeding and dyspepsia is not observed with paracetamol.

Metabolism picture:



SIDE EFFECTS:

- Decreases blood Pressure due to stronger non selective COX inhibitor activity
- impaired liver function(in higher doses)
- impaired renal function (in higher doses)

Herring BO et al[42]aimed in evaluating the patients admitted in ICU with the administration of IV acetaminophen given preemptively and the requirement of morphine in the intubated patients. This study is a clinical trial . Forty patients were included totally. In one group of patients IV acetaminophen given preemptively before intubation and other group is placebo. In the case group IV acetaminophen were given every 6th hourly. The pain scores was found to be more in the placebo group without iv acetaminophen in the 2nd and 4th day compared to the case group where iv acetaminophen is given every 6th hourly. The total requirement of morphine was lower in the group receiving IV acetaminophen when compared to placebo group. Therefore the results of this study stated that there is a use in giving IV acetaminophen preemptively in intubated patients admitted to ICU. Kashefi P et al[43] compared the efficacy of preemptive analgesia with (NSAIDS) and acetaminophen and evaluated the preemptive analgesia efficacy of Celecoxib and acetaminophen with placebo for pain relief postoperatively

in patients undergoing orthopedic surgery under GA.99 patients for elective distal extremity surgery were categorized in three groups: group 1 included patients who received oral Celecoxib 200 mg before surgery; group 2 included with oral acetaminophen 320 mg 2 h before surgery; and group 3 included those with oral placebo 2 h before surgery. Pain scores were recorded at 4, 12, and 24 h after surgery. The pain scores 4 h after operation was significantly less in group 2 than in groups 1 and 3 , respectively, P = 0.015). No significant difference was noted in pain scores at 12 h in group 2, group 1, group 3, respectively P> 0.05) and 24 hours in group 2, group 1, group 3, respectively, P> 0.05) after operation . The results of this study shows that oral Celecoxib 200 mg 2 h before operation is better than using oral acetaminophen 320 mg 2 hours for control of postoperative pain in patients who underwent orthopedic surgery under GA.

Cakan T et al [44] says the efficacy of Paracetamol, a COX 2 inhibitor has less GI and platelet-inhibiting drawbacks and is better tolerated than other NSAIDS. Hence it is efficient when compared to other drugs in the relief of postoperative pain . In this prospective, double-blind, randomized, with placebo as control, the primary outcome was analgesic efficacy, opioid-sparing effect and effects on adverse effects related to opioids when (IV) Paracetamol was given with IV morphine after lumbar laminectomy surgery . Forty patients were included and divided into 2 groups (20 each) who receive either Paracetamol 1 g (group 1) or 0.9% NaCl100 ml (group 2) at the end of the operation and at 6-hour intervals and monitored over a period of 24 hours. Rescue analgesia with morphine was given as patient controlled analgesia in both the groups. Pain was evaluated with visual analog scale at rest and on movement at the 1st, 2nd, 4th, 6th, 12th, 18th, and 24th hours. Pain scores at rest and on movement at the 12th, 18th, and 24th hours were significantly lower in Paracetamol group .The consumption of morphine was similar in both the groups. Nausea and vomiting was also more in the morphine group and statistically

significant. The rating of decreased pain scores was also more in the Paracetamol group (45%) when compared to placebo group (5%).The results of this study shows that although IV paracetamol did not have much opioid sparing effect, it did decrease VAS scores at certain period of times and also incidence of vomiting and there is increase in patient satisfaction. Fayaz MK et al [45] studied in coronary bypass surgery the analgesic efficacy of three drugs – Diclofenac, Paracetamol and placebo. It is a prospective randomized double blind placebo controlled study. Totally sixty patients were enrolled in the study.Patients were divided into 3 groups: Diclofenac, 100 mg rectally, and Paracetamol, 1 g rectally and placebo. Diclofenac was repeated after 18 hours and Paracetamol every 6 hours for 24 hours after surgery. All patients received morphine in the postoperative period as a patient-controlled analgesia. The results of this study shows that 24 hour morphine consumption with Diclofenac/Paracetamol was 12 +/- 6 mg, Diclofenac22 +/- 13 mg, and placebo 37 +/- 15 mg. In the placebo group the patients had significantly higher pain scores at 12 and 24 hours compared with other two groups. Extubation time was also found to be prolonged in the placebo group compared with the Diclofenac/Paracetamol and Diclofenac groups. Oxygenation following extubation was significantly lower in the placebo group compared to other two groups. Adverse effects such as nausea and vomiting were significantly less in the Diclofenac/Paracetamol and Diclofenac groups than in the placebo group. The conclusion is NSAIDS has a significant opioid-sparing effect after CABG, and the extubation time was also less in the prior group and the need for oxygen is also less. Juhl GI et al[46] conducted a randomised with the placebo-controlled study to know the analgesic efficacy of IV Paracetamol in a third molar surgery .The assessment was in a period of 8 hours. If the patient exhibit moderate to severe pain was treated with IV Perfalgan 1g or 2g iv stat. Totally 297 patients were enrolled – with 132 receiving Paracetamol

2g and other 132 receiving 1gParacetamol and placebo. In the 2g Paracetamol group, the pain scores was lower till 6 hours and pain scores was lower when compared to other groups. The time required for analgesia requirement was also longer in 2gParacetamol group when compared to other groups. Adverse effects were similar between the three groups. The vital parameters was also similar in all the groups. The conclusion is when 2g IV Paracetamol is given as a starting analgesia for treating postoperative pain in third molar surgery is superior to 1g IV Paracetamol. Anderson BJ et al[47] in his study stated that Paracetamol is an efficient drug which has both central analgesic effect and inhibition of prostaglandin synthesis. The central site of action is mediated through activation of serotonergic pathways mainly descending pathways. The primary site of action is its inhibition in prostaglandin synthesis

Ayatollahi V et al[48] stated that there are many consideration regarding selection of anaesthesia drugs for elective caesarean patients. The drugs must prevent stress during surgery due to intubation which indirectly ends up in neonatal complications. This study is to assess mainly the effects of Paracetamol given before intubation and its effect in postoperative pain in mother and neonatal apgar scores and vital parameters. Its a randomized double blinded with placebo as control study .Totally 60 patients 30 in each group- in the case group patients received 1g IV Paracetamol before surgery and in control group normal saline were given. In both the groups—sodium thiopental and succinylcholine were given as anaesthesia. Maternal (SBP), (DBP), (MAP) and (HR) were measured before and after anaesthesia, and at 1st and 5th minute after anaesthesia. Apgar scores was also assessed after surgery. Postoperative pain was assessed by (VAS) the time of the first analgesic request by patients in the postoperative period were noted. The SBP, DBP, MAP and HR were maintained significantly better in Paracetamol group than in placebo group ($P < 0.05$) there were no difference in the apgar scores. The VAS pain score was significantly lower in Paracetamol group than in placebo group at all measured times after surgery. The need for analgesia is also lesser in the Paracetamol group when compared to placebo.

The results suggested that IV Paracetamol is an effective agent to reduce hemodynamic responses to intubation, and provides better postoperative pain relief without neonatal adverse effects in women undergoing caesarean section under GA. Atashkhoyi S et al[49]stated that effective pain relief in the postoperative period is necessary in a patient undergoing caesarean section to facilitate early ambulation and to care for her infant. The main aim of the study is to evaluate the efficacy of 1g IV Perfalgan given preventively in the postoperative pain and the total amount of analgesic consumption during the first 24 hour period after surgery. Totally 100 patients were enrolled and spinal anaesthesia was given to all patients. In one group 1g IV Paracetamol was given to all patients and in other group normal saline was given 20 minutes before the end of the operation .Pain scores in the postoperative period was lower upto 4 hours in the case group when compared to control and cumulative analgesic consumption was also lower in the case group. Hence the conclusion is preventive administration of Perfalgan is effective in reducing postoperative pain upto 4 hours after surgery and also total analgesia consumption

Darvish H et al[50] stated that the most significant complications in cesarean surgery is pain in the postoperative period and analgesia used to reduce it for better compliance of the patient. This study is to compare the effect of Diclofenac and Paracetamol with Meperidine to relieve postoperative pain after caesarean surgery. Totally 120 patents were enrolled in the study. All patients received spinal anaesthesia before surgery.In one group, Diclofenac suppository and 1g iv Perfalgan was given at the end of operation and in other group 20 mg Meperidine was given in the recovery room for the pain in the postoperative period. Postoperative pain relief was significantly lower in the Diclofenac and Paracetamol group after 6 hours and 12 hours after surgery and the time of first analgesia requirement was also lower in the Diclo and Para group when compared to Meperidine group. But the total consumption of Meperidine was similar in both the groups .The frequency of adverse effects was similar between the groups. Hence the result of the study shows that Paracetamol and Diclofenac has better efficacy in the relief of

postoperative pain when compared to Meperidine group. Curr Med et al[51] compared the effects of oral Paracetamol with iv Ketorolac and iv Ketorolac alone in the relief of postoperative pain after uterine suction evacuation. Random allotment of patients in the procedure of suction evacuation to receive oral Paracetamol and IV ketorolac 15 minutes before surgery and ketorolac alone in one group .The time duration for the procedure was 11 minutes in the Paracetamol group and 13 minutes in the ketorolac group. Numerical rating scale was used to assess the pain scores in the post procedure period.60 women were included in each group. There were significant differences in the pain scales 3minutes after the end of the surgery and before discharge from the hospital. The morning after surgery, the pain scores was significantly different between the two groups. There were no difference in the adverse effects between the groups. This study suggests that combination of Paracetamol with IV ketorolac is effective in the better pain relief in the postoperative period when compared to iv ketorolac alone. A study taken from the journal anaesthesia intensive care[52]states that Paracetamol and NSAIDS are most oftenly used for postoperative analgesia after surgery. Dilatation and curettage, is a common one day procedure which has post procedural pain . This pain is mainly due to prostaglandins which is generated. In this study they have investigated the analgesic efficacy of Paracetamol and parecoxib in the relief of post procedural pain. This is a randomized, double blinded with the placebo as control. Totally 240 women were included in the dilatation and curettage procedure. Patients were randomized into four groups with intravenous Paracetamol 2 g, intravenous parecoxib 40 mg or placebo after induction and with IV fentanyl. The primary outcomes were pain scores after 1 hour in the postoperative period and the total usage of Analgesia Score. There were no significant differences in primary outcomes between the groups. The AUC for pain scores upto 2 hours postoperatively was significantly lower in the group receiving Paracetamol

and the need for rescue analgesia with tramadol was less in the combination group . Therefore the conclusion is that Paracetamol or parecoxib does not produce a clinically significant reduction in pain in the postoperative period.

Munishankar B et al [53] have investigated the adverse effects of paracetamol and diclofenac after major surgery. Totally 78 patients were enrolled in the study in the elective caesarean section. This is a double blinded randomized study. 3 analgesics were used- Paracetamol, Diclofenac and the combination of Paracetamol and Diclofenac. Anesthesia was standardized with 2.25-2.5 mL of spinal bupivacaine 5 mg/mL and fentanyl. Drugs were given as a suppository at the end of surgery. The primary outcome was IV morphine use for the first 24 h in the postoperative period after surgery. Secondary outcomes were VAS pain scores measured 2, 4, 6, 10 and 24 h after surgery and side effects measured in the first 24 hours. The results of this study shows that in the combination group the morphine consumption was less when compared to either drugs alone. In the single drug groups, the pain scores was more or less similar and no differences in the morphine consumption. Therefore the conclusion is the combination of Diclofenac and Paracetamol has the effect of reducing upto 38% less morphine consumption in the postoperative period.

Moon YE et al [54] stated the analgesic effect of acetaminophen administered pre-emptively and its effect on opioid consumption, pain scores, and side effects in patients undergoing elective abdominal hysterectomy. A randomized, double-blinded with the placebo as control was performed in 76 women undergoing abdominal hysterectomy. Patients received either acetaminophen 2 g in one group or placebo in other group intravenously 30 min before surgery under GA . Postoperative pain was reduced with intravenous hydromorphone 0.2 mg bolus.

Hydromorphone consumption, VAS pain scores and any side effects were observed at 1, 2, 6, 12, and 24 h after the surgery. The results shows that overall hydromorphone consumption was lower in the Paracetamol group when compared to other group, but there is no significant differences in the pain scores . The postoperative side effects like nausea and vomiting was also lower in the Paracetamol group. Therefore the conclusion is preemptive giving Paracetamol in the abdominal hysterectomy patients has some effect in the decreased morphine consumption in the postoperative period .Arici S et al[55] in his study evaluated the effects of Paracetamol given preoperatively in the total abdominal hysterectomy surgery and its postoperative analgesic effects .Totally 90 patients were enrolled in the study. Three groups were allocated- group 1 Paracetamol given before induction , in group 2 – Paracetamol given prior to skin closure and in group 3- control group. In the postoperative period, morphine was administered through patient controlled analgesia pump and the parameters assessed was pain scores, sedation scores ,VAS pain scores, patient satisfaction, total hospital stay, side effects .The total morphine consumption through patient controlled analgesia and pain scores was reduced in the Paracetamol group when compared to control group. Paracetamol given intraoperative or preemptively have no effects in the hemodynamic parameters. The conclusion is in total abdominal hysterectomy ,intravenous Paracetamol given preemeptively or intraoperatively has effects in the reduction of morphine consumption and significant reduction in the pain scores. Sinatra R et al [56]compared the effects of Paracetamol and propacetamol (prodrug) in the orthopedic surgery when administered after surgery for the relief of moderate to severe pain.

Three groups- IV Paracetamol given(1), 2gpropacetamol(2), placebo were administered at 6 hourly interval in a period of 24 hours as a rescue analgesia. All patients received patient controlled analgesia with morphine. The intensity of pain, total morphine use was measured at

regular intervals. Totally 150 patients were included. The pain relief was significantly reduced in the Paracetamol and propacetamol group when compared to placebo upto 6 hours. The time of morphine requirement was 3 hours in Paracetamol group , 2.6 hours in propacetamol group and 8 hours in placebo group in the Paracetamol and propacetamol group the morphine consumption was significantly reduced when compared to placebo. Drug related side effects was similar in all the groups. Intravenous acetaminophen, 1 g, administered in patients with moderate to severe pain after orthopedic surgery over a 24 hour period provided effective analgesia and was better tolerated.

Anirban HCet al[57]compared the effect of fentanyl alone with fentanyl plus IV Paracetamol Before laparoscopic cholecystectomy and its effects in the efficacy of analgesia, opioid sparing Effects and the side effects related to it. 80 patients were allocated divided into 2 groups receiving 1 g IV Paracetamol in one group before induction and in other placebo. Both groups received im Diclofenac 8 th hourly 24 hours after surgery. The postoperative pain relief was evaluated by a (VAS) and consumption of fentanyl as rescue analgesic in the postoperative period for 24 h after surgery was measured. The VAS was significantly lower in first 2 hours after surgery in Paracetamol group. The time requirement for rescue analgesic was also prolonged in the Paracetamol group and the total fentanyl consumption was also reduced in the Paracetamol group when compared to fentanyl group. There were no difference in the sedation scores and postoperative side effects in the two groups. The conclusion is IV Paracetamol given as a preemptive analgesia is effective in the treatment of postoperative pain after lapararoscopic cholecystectomy.

Cakan T et al [58] in his prospective, double-blind, randomized, placebo-controlled study compared the analgesic efficacy, opioid-sparing effect and effects on opioid-related adverse

effects of intravenous (IV)Paracetamol and IV morphine before lumbar laminectomy and discectomy. Totally 40 patients were enrolled in the study and divided into two groups. One group receiving IV Paracetamol and in other group receiving iv normal saline and in both the groups patients received iv morphine as a rescue analgesic. Pain was evaluated at rest and on movement at the 1st, 2nd, 4th, 6th, 12th, 18th, and 24th hours using a visual analog scale. Pain scores at the 12th, 18th, and 24th hours were significantly lower in the Paracetamol group when compared to the other group . Morphine consumption was not significantly different between the groups. The conclusion of this study shows that IV Paracetamol has not significant opioid sparing effect but has good analgesic efficacy in the postoperative period.

Tab lov B et al [59]in his study stated that in gynaecological surgeries , Paracetamol is considered as an effective analgesic when given as an analgesic in the postoperative period after surgery. The main advantage of this drug is that it has no side effects when compared to other drugs for considering analgesia in a patient in the postoperative period Naga Rani MA et al [60] in his study stated that Paracetamol is a effective drug when used for pain relief in the second stage of labour. The results of the study shows that Paracetamol is the drug for fever and for pain relief in the antenatal period and during labour. This is mainly due to the safety of the drug and due to its nil fetal effects. Elbohoty et al [61] evaluated the analgesic efficacy of Paracetamol when used in the active phase of labour. The results of this study shows that pain scores was significantly reduced after 15mins,1 hour, 2 hours after delivery. It has also been shown that the drug has no effects in the apgar scores of the baby.

MATERIALS AND METHODS

This is a prospective randomized controlled interventional study. The study was started after obtaining clearance from IHEC (Institutional Human Ethics Committee), PSG IMSR & hospital and also consent from the patient.

Study Type: interventional

Study Design: Allocation – randomized by Random number table method

Study Population: Antenatal patients in OG ward PSG IMSR planned for elective caesarean section after anaesthetic fitness under ASA 1 and 2

Study Period: one year from JAN 2016 – DEC 2016

Inclusion criteria:

- age group: 18 – 40 years
- gestational age: 36 weeks to 40weeks
- singleton pregnancy
- elective caesarean section

Exclusion criteria:

- age group: < 18years , > 40 years
- previous 2 LSCS
- emergency LSCS
- allergic to paracetamol

- liver disesase
- alcoholism
- renal disease
- h/o any narcotic drugs
- seizures
- morbidly obese
- psychological disorders
- bleeding diathesis
- neurological disorders

Sample size:

- Total cases – 160, 80 patients in both the groups according to statistical calculation in my study period.
- The indications for caesarean in majority of the patients included in the study is previous caesarean and the other minor indications are breech, placenta previa, big baby, maternal wish and CPD.
- None of the patients in both the groups received any other premedications
- Routine monitoring was performed in both the groups in the operation theatre with NIBP , and pulse oximetry.
- After inserting IV cannula(18 GAUGE needle),all patients was started on IV fluids-Ringer Lactate
- In the study group, the preemptive analgesia is achieved by the patients by receiving 1g IV Paracetamol over 15 mins before spinal anesthesia .

- Paracetamol used in the study – inj. PERFALGAN 1g IV 100 ml (10 mg/ml) – the total dose – 1000 mg
- Both the groups received spinal anesthesia – standardized with 1.8 ml 0.5% bupivacaine and 0.4 ml fentanyl.
- Lumbar puncture was performed at L2-L3 OR L3 –L4 subarachnoid spaces
- In the control group, no analgesic drug is administered except IV fluids.
- After this, the patients in both the groups received spinal anesthesia with 1.8 ml 0.5% bupivacaine and 0.4 ml fentanyl
- The vital parameters like PR,BP and SPO2 are recorded in both the groups at the starting of the surgery

Post Operative Period:

Visual analog score was used in the postoperative period for the assessment of severity of pain. In the postoperative period, the time of first analgesic requirement and pain scores was assessed in both the groups by visual analog scale. Rescue Analgesics was given in the postoperative period if visual analog score more than 4. Sedation was given in the need of the patient.

DATA ANALYSIS:

- Primary outcome: The time of first analgesia requirement in the

  postoperative period , the postoperative pain scores @ 0 , 30mins, 2 hours , 4 hours, 6 hours , 12 hours , 24 hours.

- Secondary outcome: Maternal vital parameters- PR, BP , postoperative complications, breast feeding ,wound sensitivity, ambulation day, NICU admission, baby APGAR scores
- Predictor variable- whether Paracetamol drug used or not
- Outcome variable- The time of first analgesia requirement, the postoperative pain scores @ 0, 30mins, 2 hours, 4 hours, 6 hours , 12 hours , 24 hours after surgery

PROFORMA

NAME :

AGE :

SNO :

OP NO :

IP NO :

UNIT :

MENSTRUAL H/O:

OBSTETRIC HISTORY:

ANTENATAL COMPLICATION:

PAST HISTORY:

O/E:

PR:

BP:

TEMP:

PALLOR:

ICTERUS:

CVS:

RS:

P/A:

UTERINE HEIGHT:

PRESENTING PART:

FETAL HEART:

NON STRESS TEST:

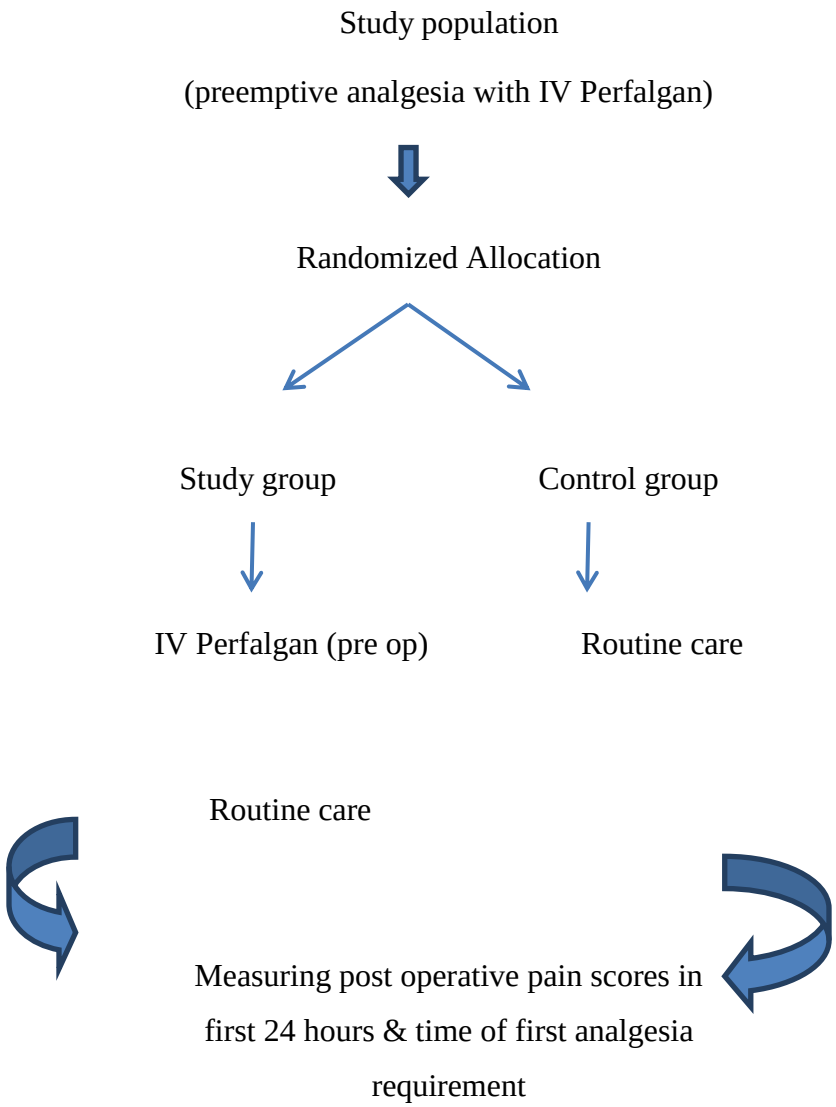
MODE OF DELIVERY:

INDICATION:

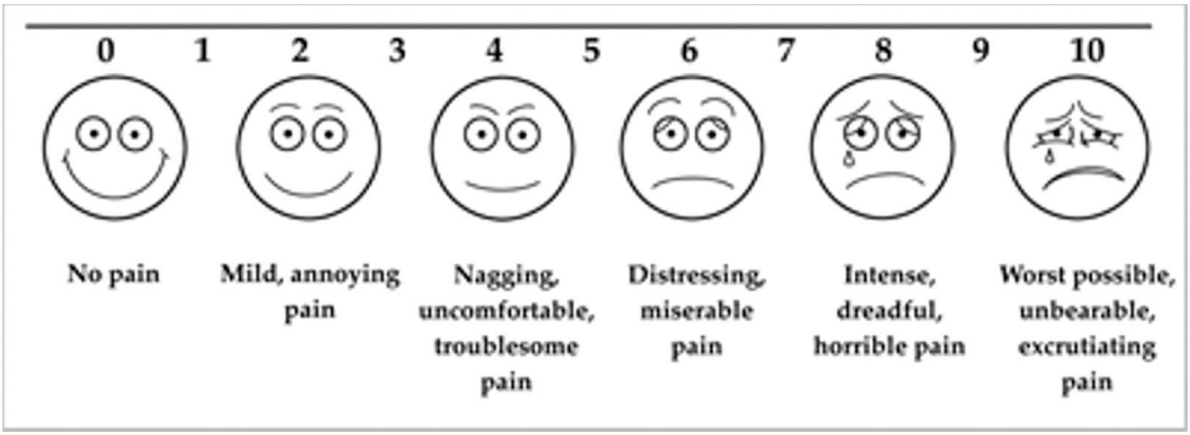
PREEEMPTIVE ANALGESIA:

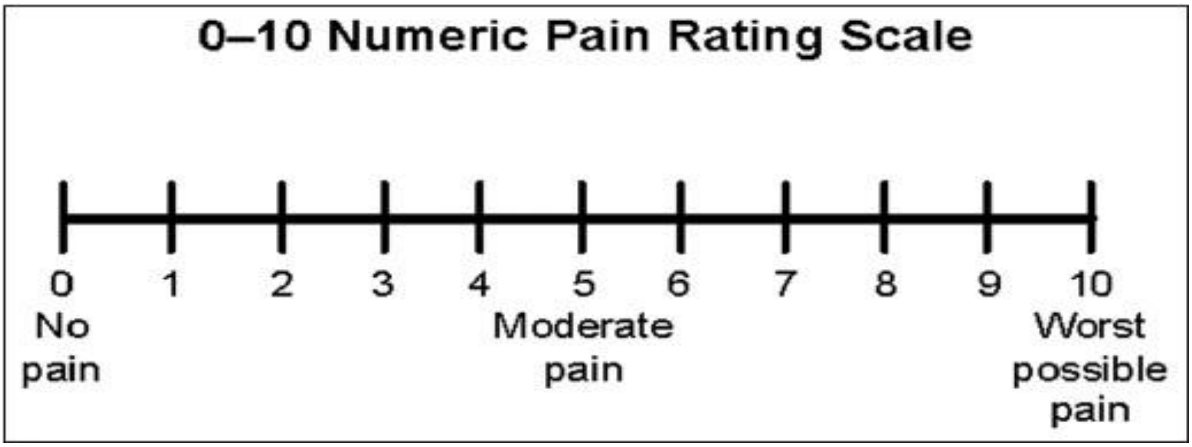
POSTOPERATIVE PERIOD: ASSESMENT OF PAIN IN THE RECOVERY BY VISUAL ANALOG SCORE

PROTOCOL


Study population
(preemptive analgesia with IV Perfalgan)
Randomized Allocation
Study group
Control group
IV Perfalgan (pre op)
Routine care
Routine care
Measuring post operative pain scores in first 24 hours & time of first analgesia requirement

PAIN SCORE ASSESSMENT BY VISUAL ANALOG SCALE





PAIN SCORES:

30 minutes after Surgery :

2hrs after Surgery :

4hrs after Surgery :

6 hrs after Surgery :

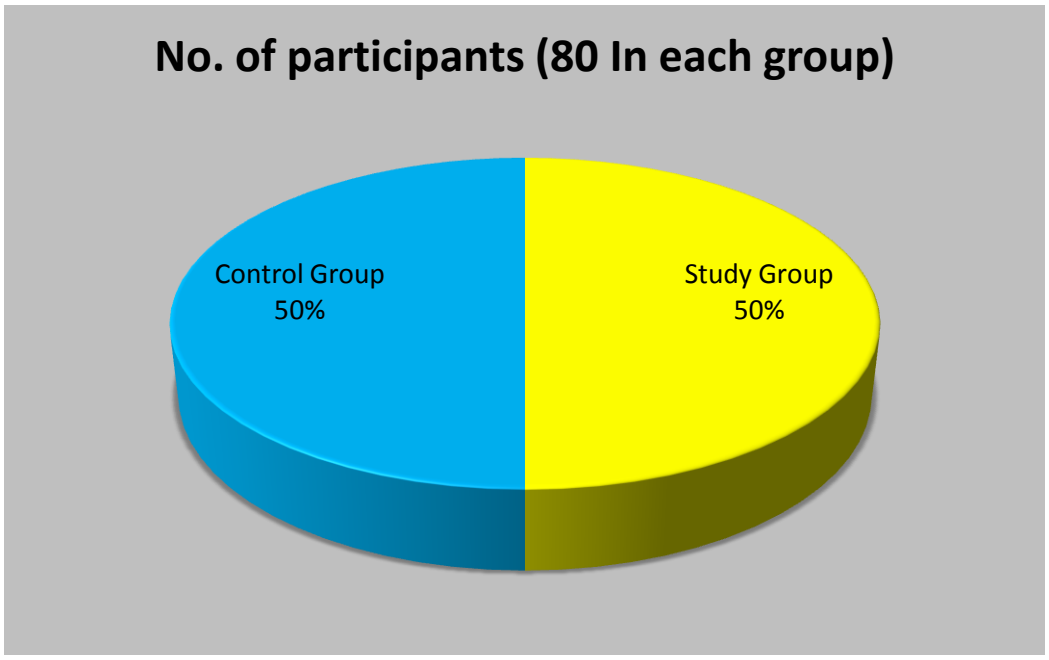
8hrs after Surgery :

10hrs after Surgery :

12 hrs after Surgery :

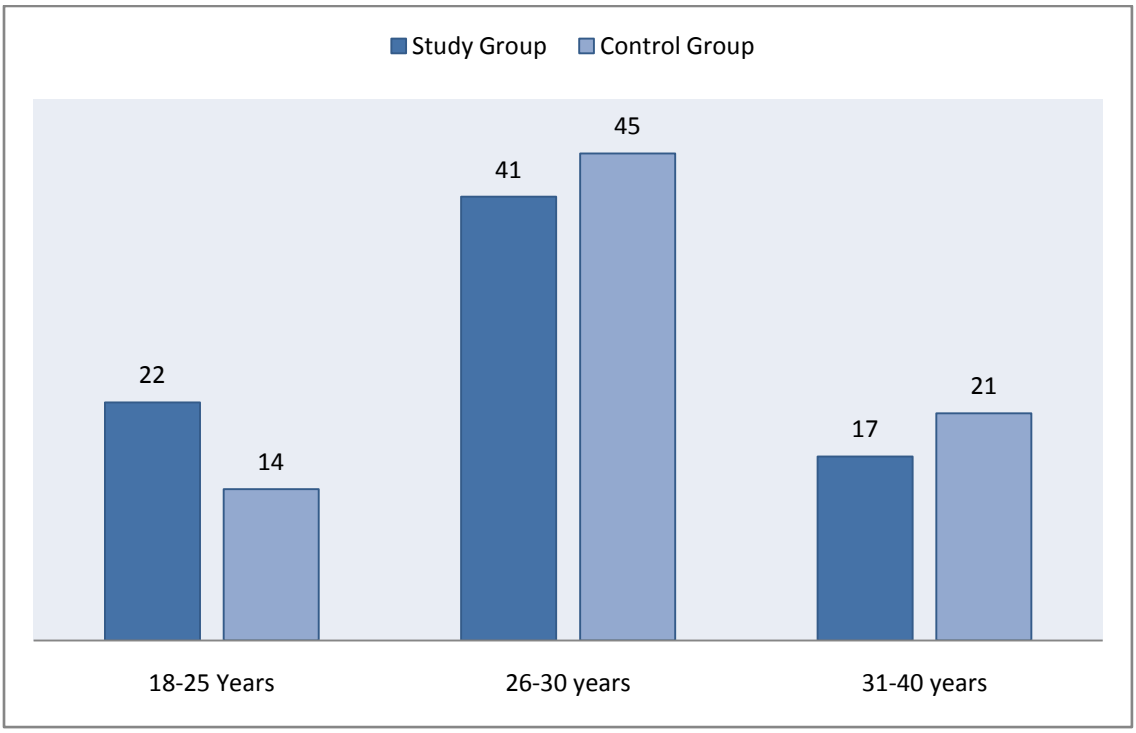
24hrs after Surgery :

RESULTS


No. of participants (80 In each group)
Control Group
50%
Study Group
50%

AGE –wise details of the study participants

Age Category	Study Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
18-25 Years	22	27.5	14	17.5
26-30 years	41	51.3	45	56.3
31-40 years	17	21.3	21	26.3
Total	80	100.0	80	100.0



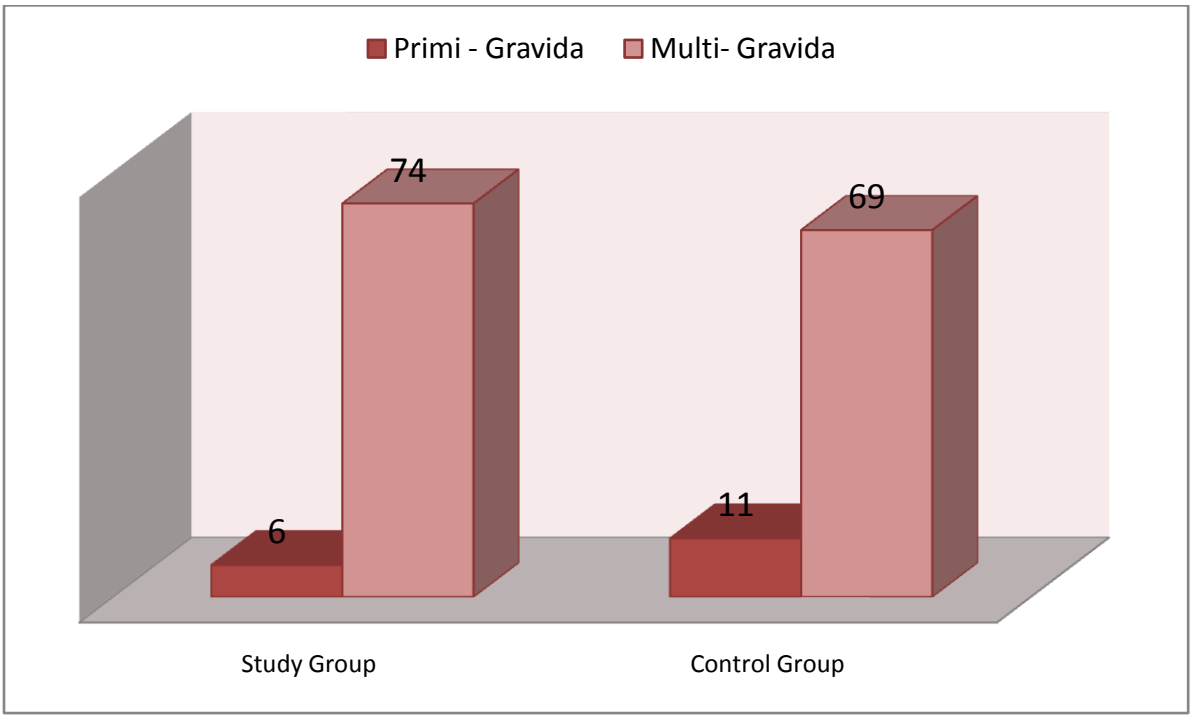
Comparison of Two Groups based on age

	Minimum	Maximum	Mean	SD	P Value*
Study Group	19	39	27.81	4.17	0.08
Control Group	20	39	28.95	4.04	

*- Calculated by independent sample t-test

GRAVIDA

Gravida	Study Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
Primi	6	7.5	11	13.8
Multi	74	92.5	69	86.3
Total	80	100.0	80	100.0



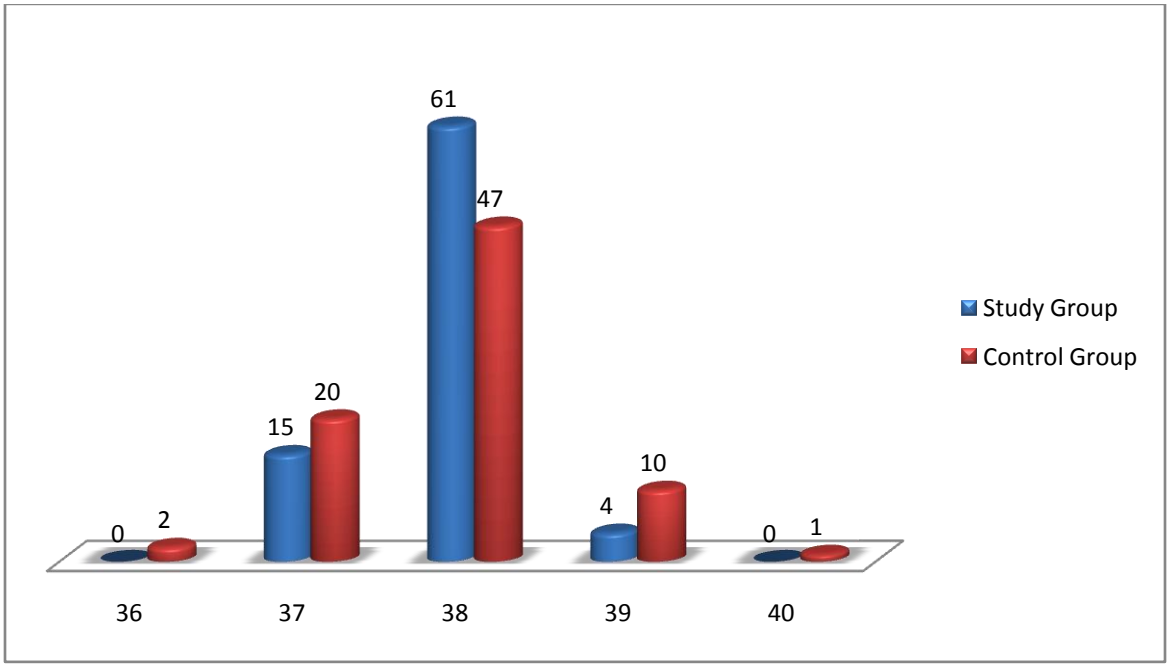
Comparison of two groups based on parity

	Study Group	Control Group	χ^2	P value
Primi	6	11	1.64	0.20
Multi	74	69		

P value calculated by chi square test.

GESTATIONAL AGE:

Gestational Age	Study Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
36	-	-	2	2.5
37	15	18.8	20	25.0
38	61	76.3	47	58.8
39	4	5.0	10	12.5
40	-	-	1	1.3
Total	80	100.0	80	100.0



Comparison of two groups based on gestational age

	Minimum	Maximum	Mean	SD	P Value*
Study Group	37	39	37.86	0.47	0.89
Control Group	36	40	37.85	0.71	

*- Calculated by independent sample t-test

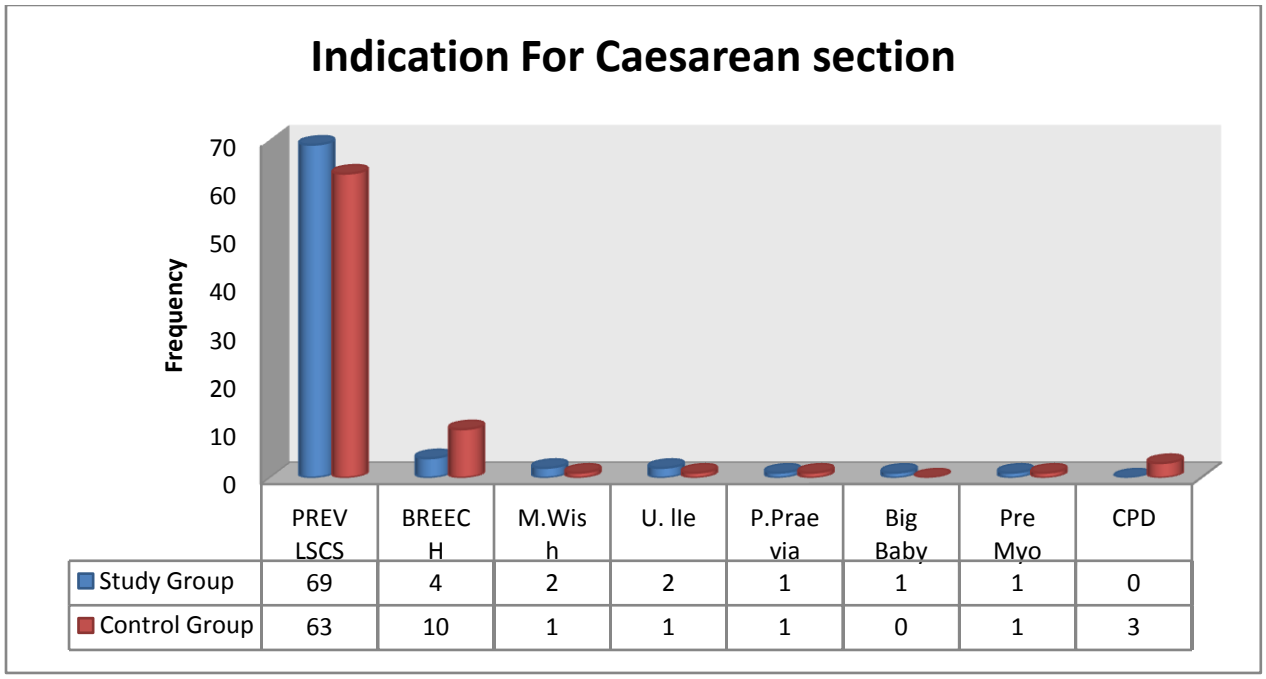
BOOKED or UNBOOKED:

	Study Group		Control Group	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Booked	80	100	80	100
Unbooked	-	-	-	-
Total	80	100.0	80	100.0

Patients in both the groups are booked in PSG

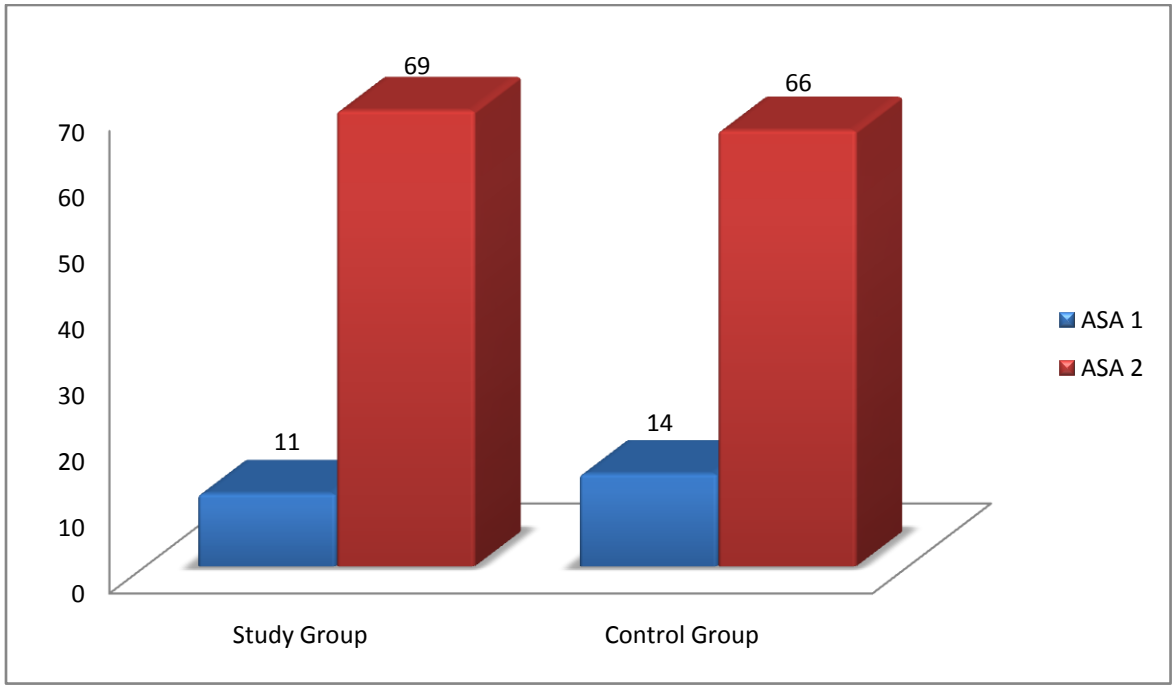
INDICATIONS FOR CAESAREAN:

	Study Group		Control Group	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Previous lscs	69	86.3	63	78.8
Breech	4	5.0	10	12.5
Maternal Wish	2	2.5	1	1.3
Unstable lie	2	2.5	1	1.3
Placenta Praevia	1	1.3	1	1.3
Big Baby	1	1.3	-	-
Pre Myomectomy	1	1.3	1	1.3
CPD	-	-	3	3.8



ASA STATUS:

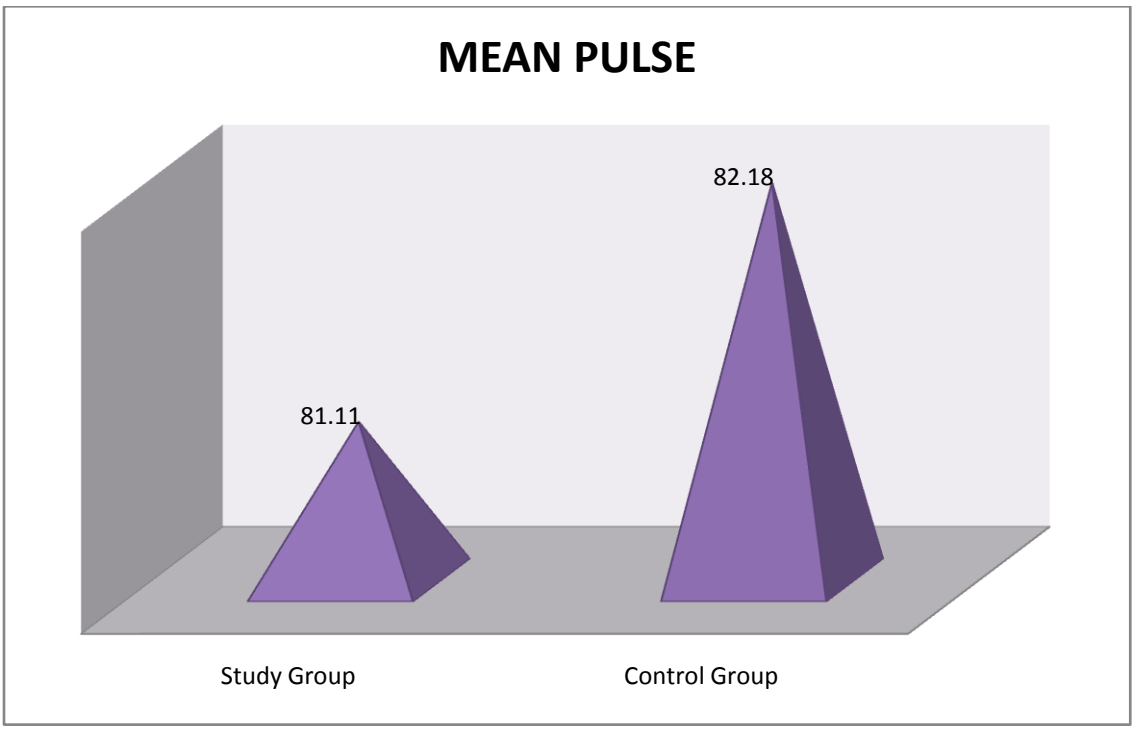
ASA	Study Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
1	11	13.8	14	17.5
2	69	86.2	66	82.5
	80	100.0	80	100.0



PULSE

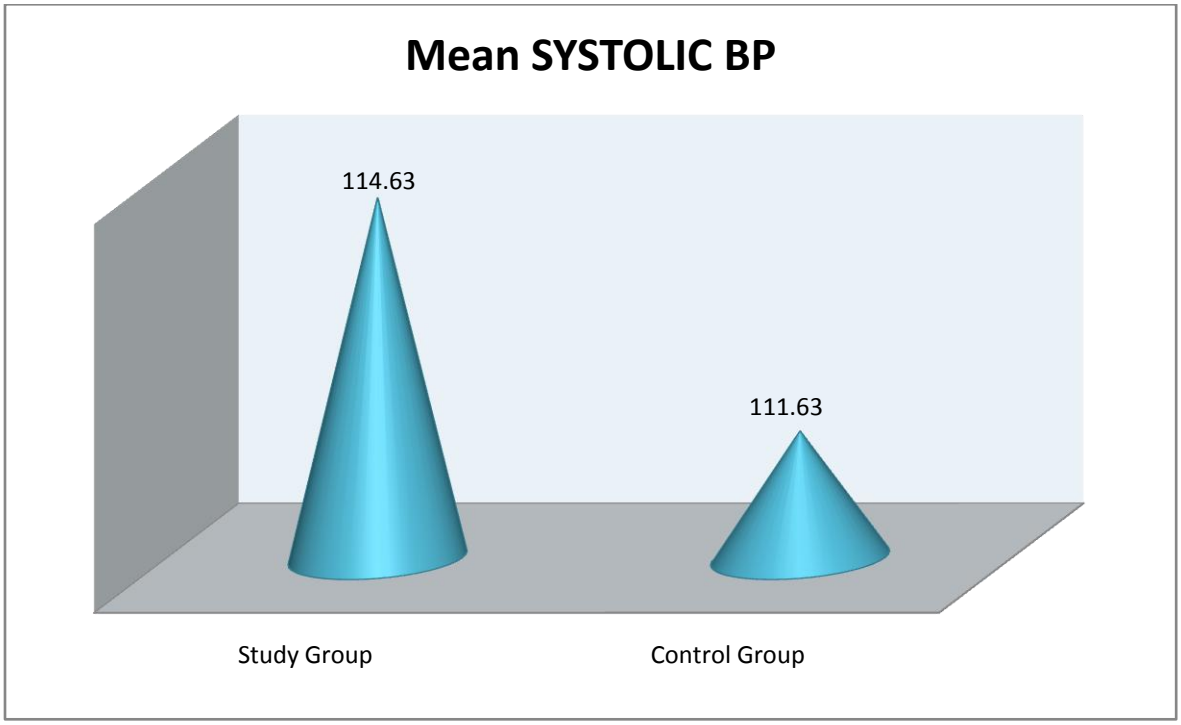
Pulse	Minimum	Maximum	Mean	SD	P Value*
Study Group	55	110	81.11	10.19	0.539
Control Group	58	110	82.18	11.60	

P value calculated by independent sample t test



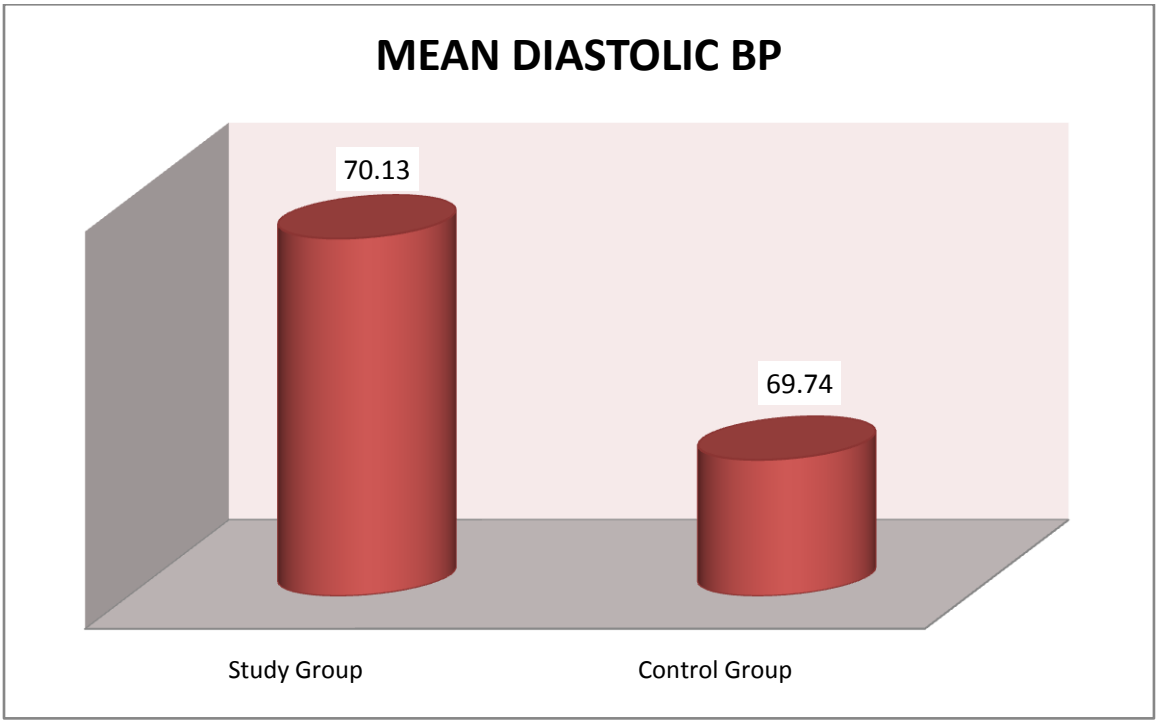
SYSTOLIC BP

SYS BP	Minimum	Maximum	Mean	SD	P Value*
Study Group	90	140	114.63	9.41	0.06
Control Group	90	140	111.63	9.20	



DIASTOLIC BP:

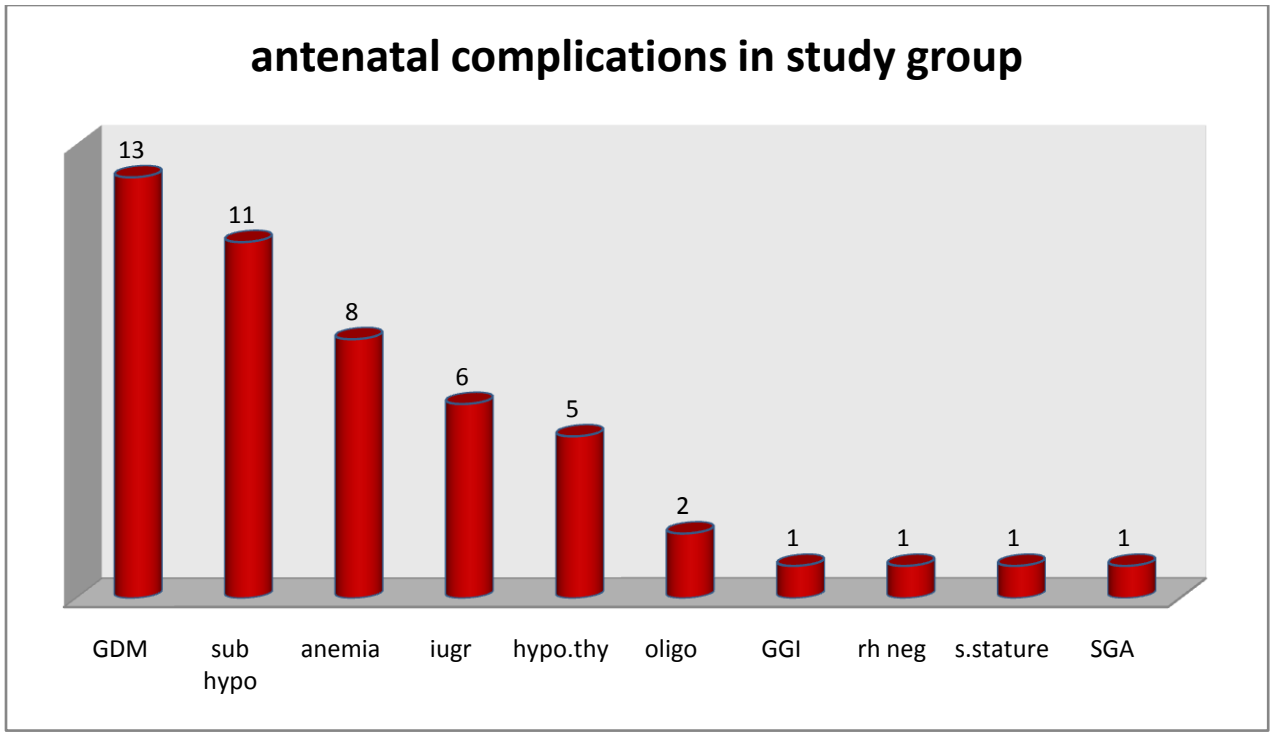
Diastolic BP	Minimum	Maximum	Mean	SD	P Value*
Study Group	50	80	70.13	7.71	0.75
Control Group	50	90	69.74	10.73	

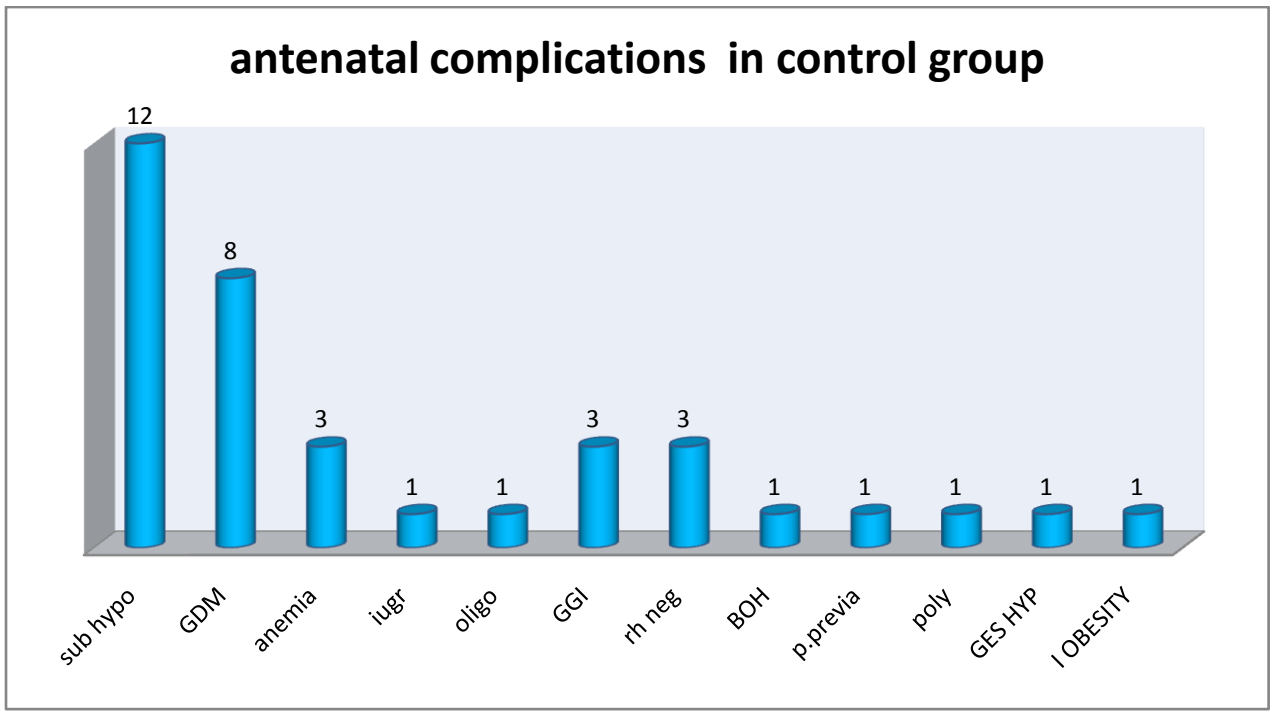


P value calculated by independent sample t test

ANTENATAL COMPLICATIONS:

	Study Group		Control Group	
	Frequency	**Percentage**	**Frequency**	**Percentage**
GDM	13	16.3	8	10.1
Subclinical hypothyroid	11	13.8	12	15.1
Anemia	8	10.0	3	3.8
IUGR	6	7.5	1	1.3
Overt hypothyroid	5	6.3	-	-
Oligohydramnios	2	2.5	1	1.3
GGI	1	1.3	3	3.8
Rh negative	1	1.3	3	3.8
Short.stature	1	1.3	-	-
SGA	1	1.3	-	-
BOH	-	-	1	1.3
Placenta previa	-	-	1	1.3
Polyhydramnios	-	-	1	1.3
Gestational hypertension	-	-	1	1.3
Class 1 obesity	-	-	1	1.3
Nil	31	38.9	44	55.1
TOTAL	**80**	**100**	**80**	**100**


antenatal complications in study group
13
11
8
6
5
2
1
1
1
1
GDM
sub hypo
anemia
iugr
hypo.thy
oligo
GGI
rh neg
s.stature
SGA

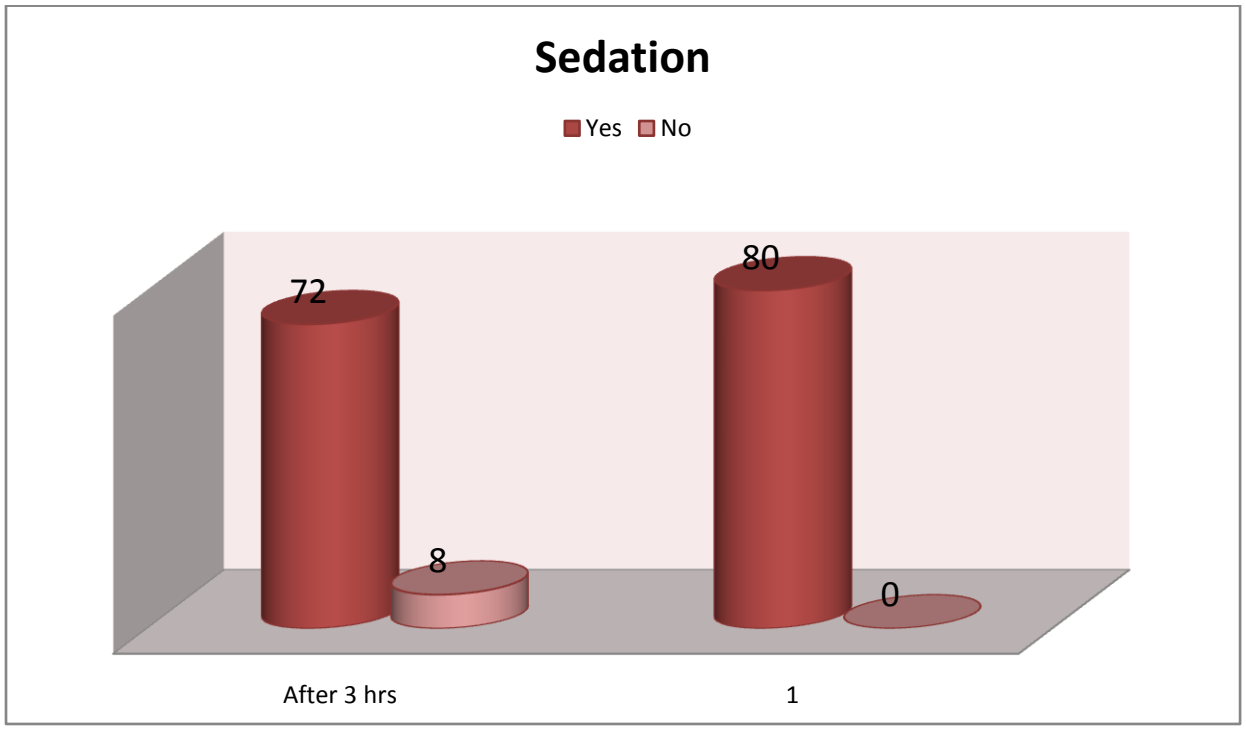

antenatal complications in control group
12
8
3
1
1
3
3
1
1
1
1
1
sub hypo
GDM
anemia
iugr
oligo
GGI
rh neg
BOH
p.previa
poly
GES HYP
I OBESITY

SEDATION REQUIREMENT:

	Study Group		Control Group		χ^2	P value
	Frequency	**Percentage**	**Frequency**	**Percentage**		
Yes	72	90.0	80	100.0	14.3	0.08
No	8	10.0	0	0		
Total	80	100.0	80	100.0		

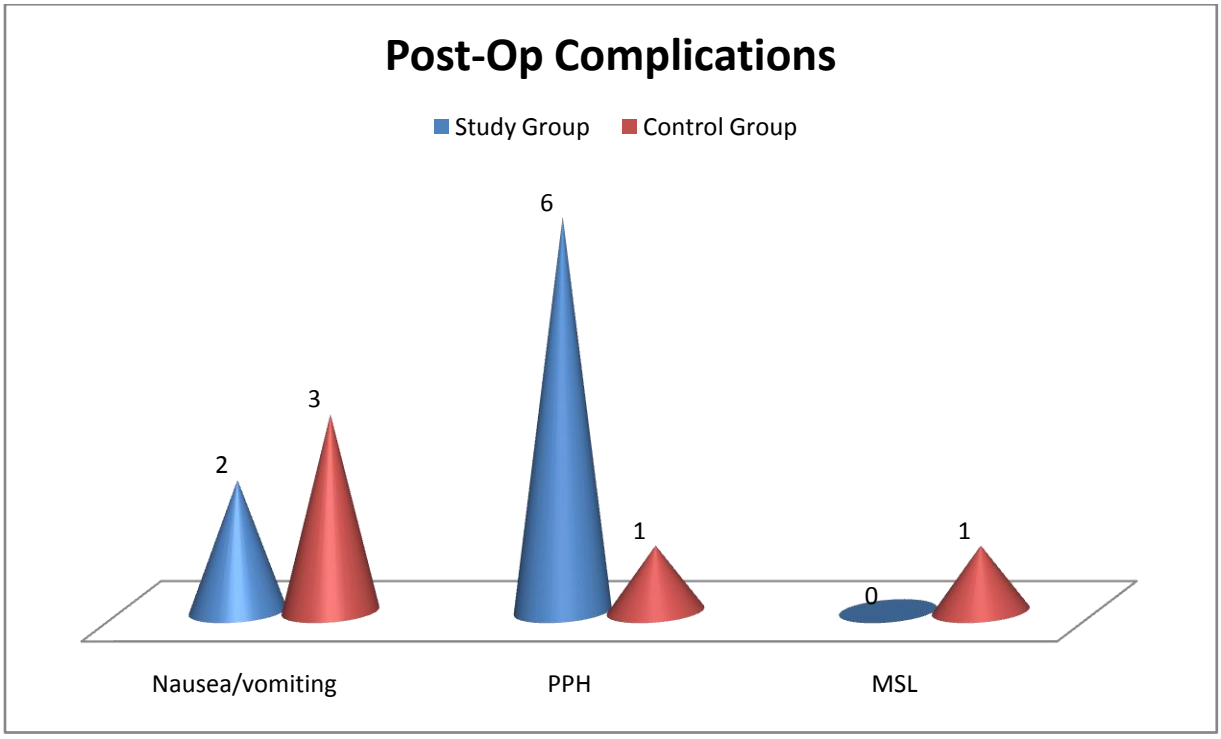
P value calculated by chi square test

Though it is not statistically significant sedation requirement was less in the study group when compared to that of the control group



COMPLICATIONS:

Complications	Study Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
Nausea/vomiting	2	2.6	3	3.9
PPH	6	7.5	1	1.3
MSL	0	0	1	1.3
NIL	73	91.3	78	97.5
Total	80	100.0	80	100.0



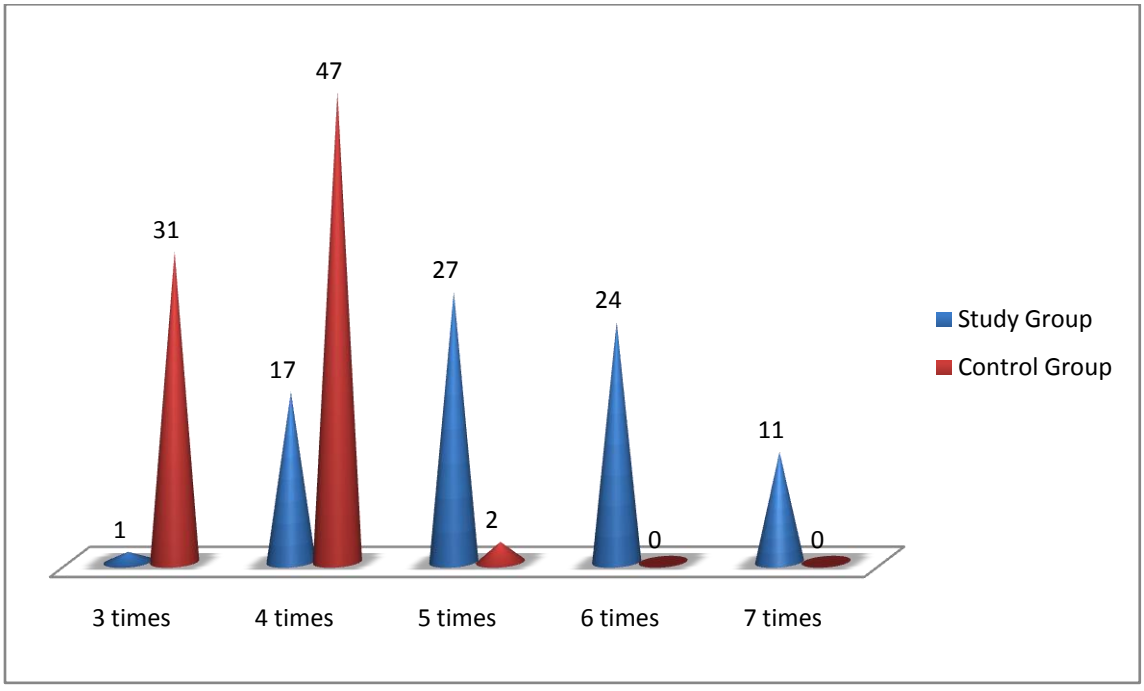
FREQUENCY OF BREAST FEEDING IN THE FIRST 24 HOURS:

No. of times	Study Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
3	1	1.3	31	38.8
4	17	21.3	47	58.8
5	27	33.8	2	2.5
6	24	30.0	0	0
7	11	13.8	0	0
Total	80	100.0	80	100.0

Breastfeeding:

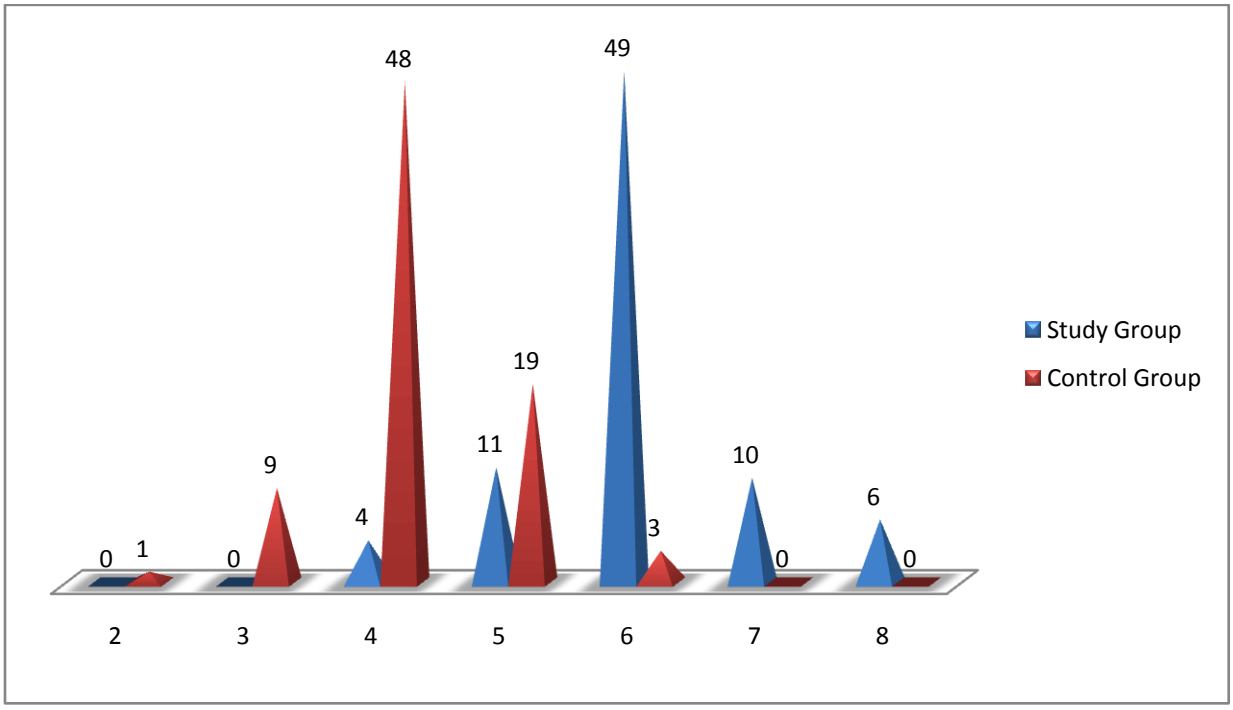
	Minimum	Maximum	Mean	SD	P Value*
Study Group	3	7	5.34	1.01	0.00
Control Group	3	5	3.64	.534	

P value calculated by independent sample t test



WOUND SENSITIVITY:

	Study Group		Control Group	
	Frequency	**Percentage**	**Frequency**	**Percentage**
2	0	0	1	1.3
3	0	0	9	11.3
4	4	5.0	48	60.0
5	11	13.8	19	23.8
6	49	61.3	3	3.8
7	10	12.5	0	0
8	6	7.5	0	0
Total	80	100.0	80	100.0



Wound sensitivity:

	Minimum	Maximum	Mean	SD	P Value*
Study Group	4	8	6.04	.878	0.00
Control Group	2	2	4.18	.725	

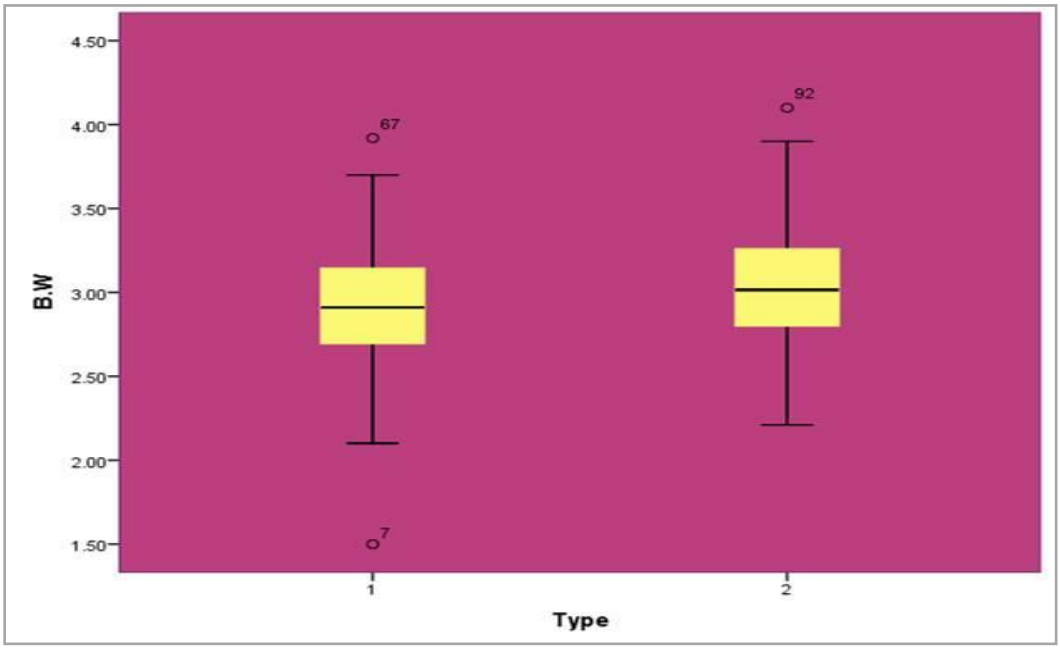
P value calculated by independent sample t test

BIRTH WEIGHT:

	Minimum	Maximum	Mean	SD	P Value*
Study Group	1.50	3.92	2.90	.41	0.02
Control Group	2.21	4.10	3.04	.35	

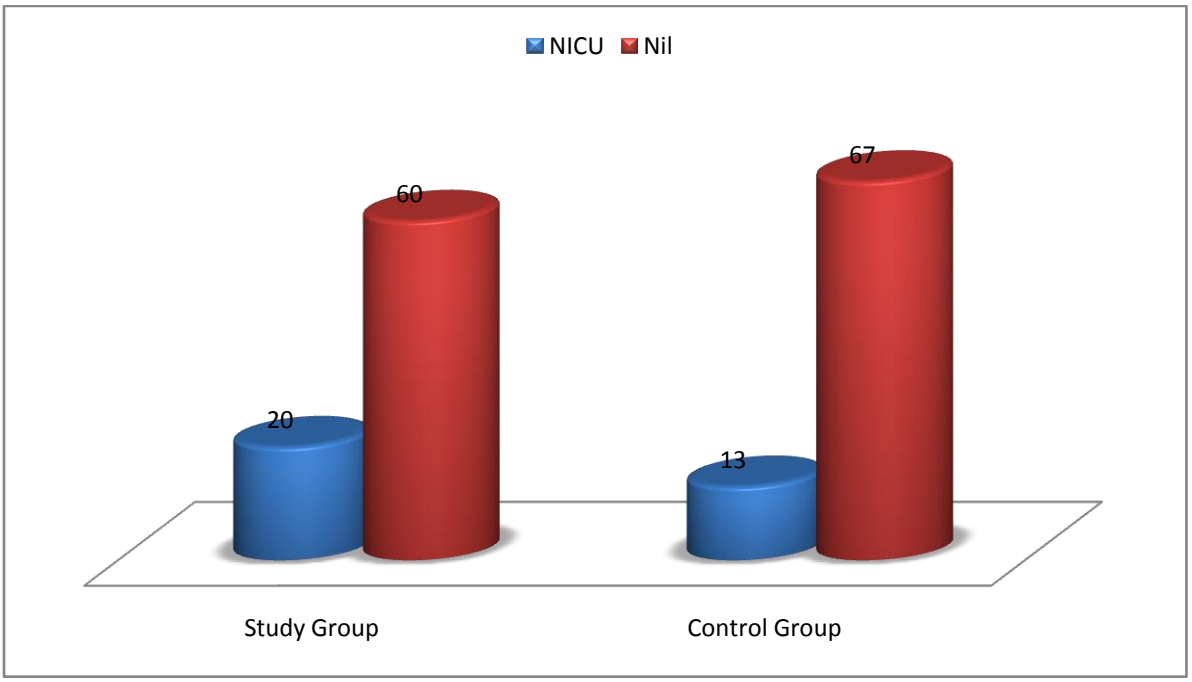
P value calculated by independent sample t test

Box Plot of Birth weight in two Groups



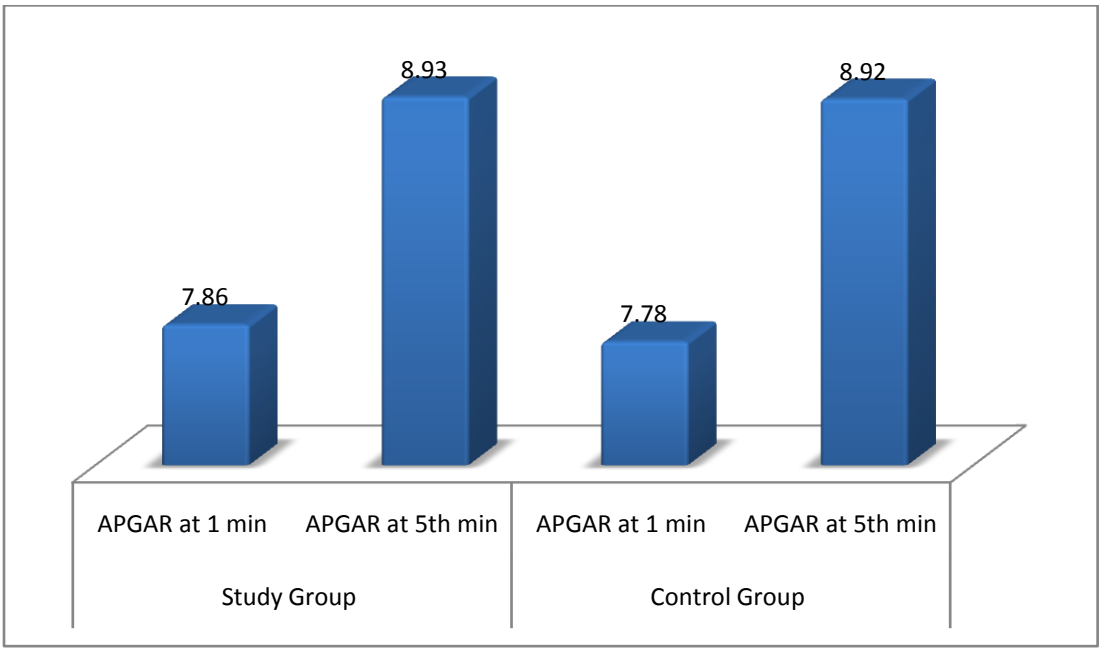
NICU ADMISSION:

	Study Group		Control Group	
	Frequency	**Percentage**	**Frequency**	**Percentage**
NICU	20	25.0	13	16.3
Nil	60	75.0	67	83.7
Total	80	100.0	80	100.0



APGAR AT 1 min AND 5 min :

Type		N	Minimum	Maximum	Mean	Std. Deviation
Study Group	**APGAR at 1 min**	80	2.00	8.00	7.86	0.70
	APGAR at 5th min	80	6.00	9.00	8.93	0.31
Control Group	**APGAR at 1 min**	80	2.00	8.00	7.78	0.75
	APGAR at 5th min	80	8.00	9.00	8.92	0.25



	Study Group		Control Group		Independent t test f value	P value
	MEAN	SD	MEAN	SD		
APGAR at 1 min	7.86	0.70	7.78	0.75	1.154	0.52
APGAR at 5th min	8.93	0.31	8.92	0.25	0.159	0.81

There is no statistical significance in APGAR score between the two groups

P value calculated by independent sample t test

TIME OF FIRST ANALGESIC REQUIREMENT:

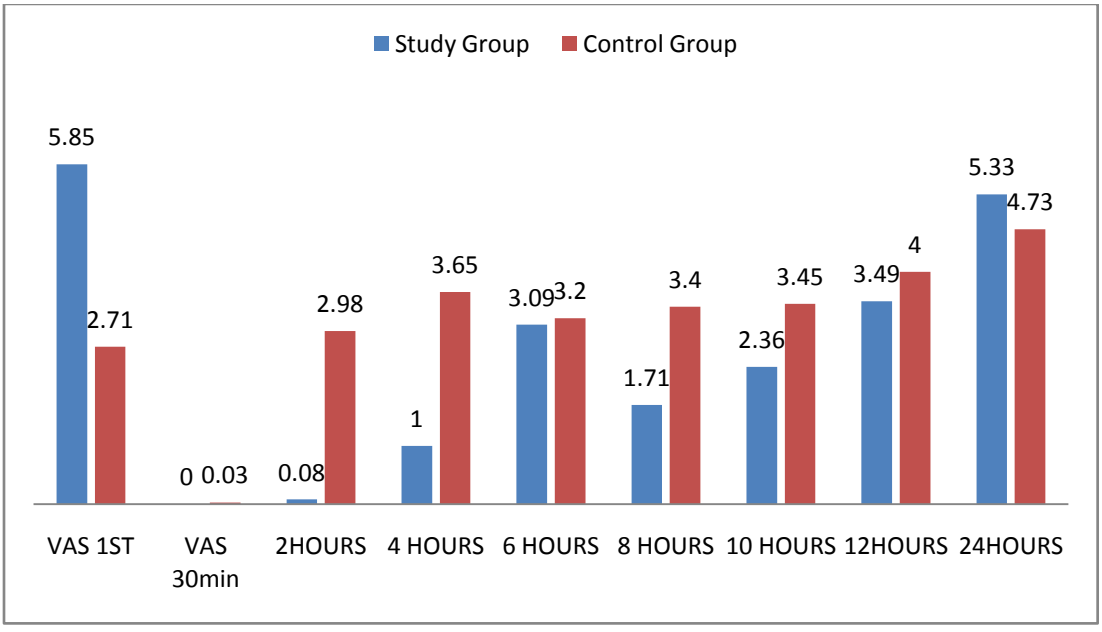
Type		N	Minimum	Maximum	Mean	Std. Deviation	Independent sample t test F value	P value
Study Group	VAS 1ST	80	4	9	5.85	.98	4.62	<0.01
Control group	VAS 1ST	80	2	4	2.71	.57		

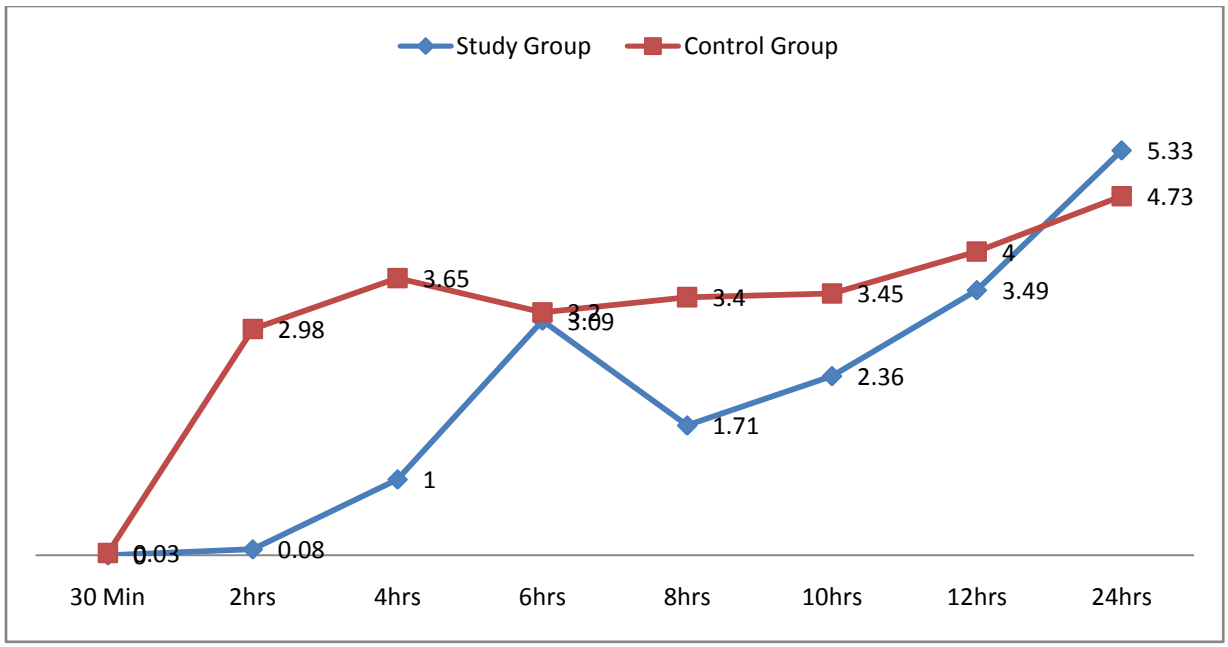
The above table clearly shows the effect of perfalgan last longer when compared with the control group and was found to be statistically significant.

P value calculated by independent sample t test

VAS PAIN SCORES:

	Study Group		Control Group	
	Mean	**Std. Deviation**	**Mean**	**Std. Deviation**
VAS 1ST	5.85	.98	2.71	0.57
VAS 30min	.00	.00	.03	0.22
2HOURS	.08	.38	2.98	0.81
4 HOURS	1.00	1.22	3.65	0.76
6 HOURS	3.09	1.14	3.2	0.79
8 HOURS	1.71	1.33	3.40	0.89
10 HOURS	2.36	1.11	3.45	0.71
12HOURS	3.49	.73	4.00	0.61
24HOURS	5.33	1.23	4.73	0.65




Study Group
Control Group
5.33
4.73
3.65
2.98
4
3.49
3.4
3.45
3.09
2.36
1.71
1
0.08
0.03
30 Min
2hrs
4hrs
6hrs
8hrs
10hrs
12hrs
24hrs

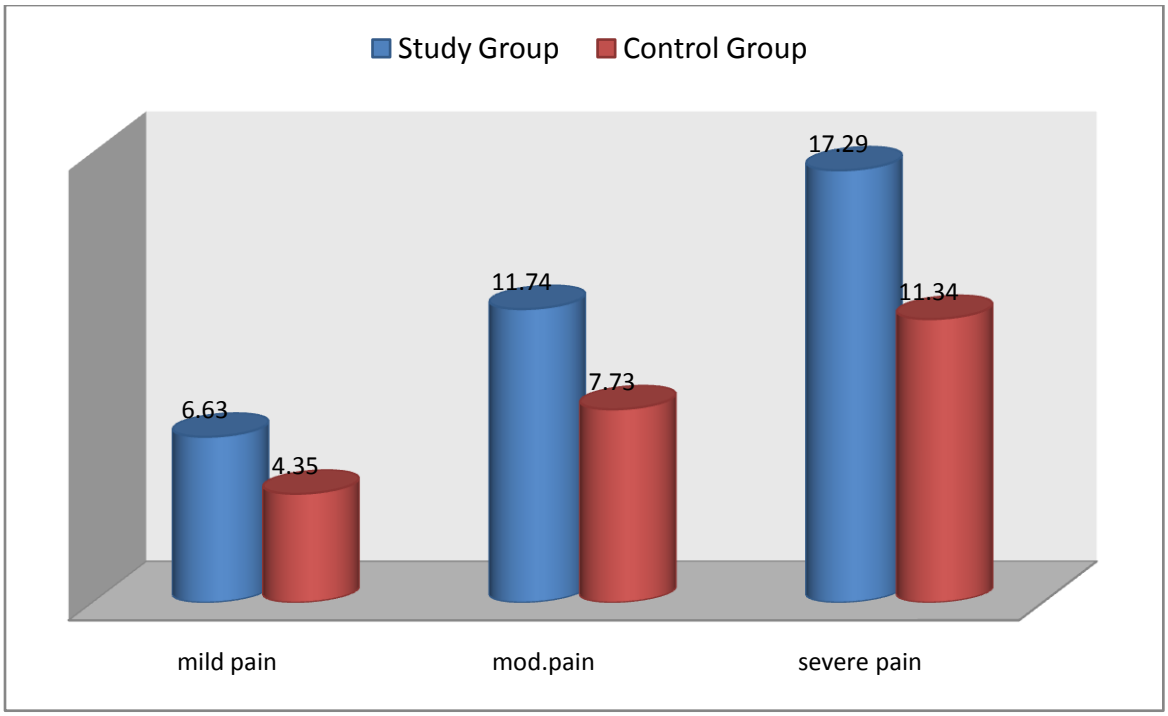
	Type	N	Mean	Independent t test F value	P value
VAS 30min	1	80	.00	4.10	.319
	2	80	.03		
2HOURS	1	80	.08	35.93	<0.01
	2	80	2.98		
4 HOURS	1	80	1.00	64.18	<0.01
	2	80	3.65		
6 HOURS	1	80	3.09	3.79	<0.01
	2	80	3.20		
8 HOURS	1	80	1.71	8.41	<0.01
	2	80	3.40		
10 HOURS	1	80	2.36	7.70	<0.01
	2	80	3.45		
12HOURS	1	80	3.49	17.83	<0.01
	2	80	4.00		
24HOURS	1	80	5.33	32.42	<0.01
	2	80	4.73		

From the above table it is obvious that those who are in the study group are having lower pain scores than those in the control group and is found to be statistically significant ($p<0.01$) except at 30 min and 24 hours.

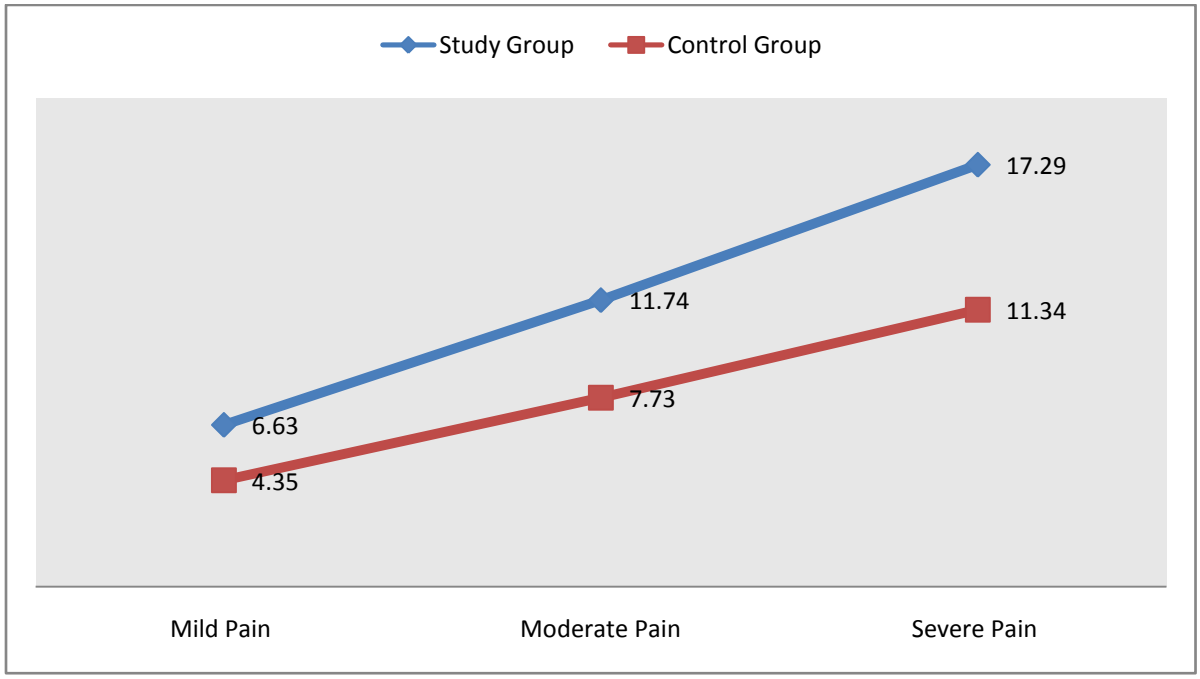
P value calculated by independent sample t test

Hours of analgesic effect in both groups

Type		N	Minimum	Maximum	Mean	Std. Deviation
Study Group	Mild pain	80	4	10	6.63	1.036
	Mod. pain	80	8	15	11.74	1.310
	Severe pain	80	12	24	17.29	2.668
Control Group	Mild pain	80	3	6	4.35	.677
	Mod. pain	80	5	12	7.73	1.583
	Severe pain	80	8	18	11.34	2.267



Analgesic effect is better in the study group when compared to the control group



Data Analysis

Data entry was made in the Excel software and Analysis was done with SPSS-24 computer package. The categorical variable is expressed in frequency and percentage. The continuous variable is expressed in terms of mean and standard deviation. The associations between variables was found by chi square test and independent sample t- test P value <0.05 was considered as statistically significant.

DISCUSSION

Caesarean section, the most commonly done surgical procedure in the recent days produces significant tissue damage together with the postoperative complications which results in pain. Inadequate pain control not only significant in the intraoperative period but also in the immediate postoperative period to prevent long term consequences Postoperative pain relief is significant because of its effects in the hemodynamic parameters and complications in the postoperative period like atelectasis , improper ventilation etc. Totally 160 patients were enrolled in the study.80 patients were assigned to receive preemptive paracetamol before surgery in the study group.

We compared preemptive effects of paracetamol in the postoperative period with the control in the aspects of pain scores at 0 ,30 mins,2 hours,4 hours,6 hours, 12 hours , 24 hours by visual analog pain scale, time of first analgesic requirement as primary outcome.

The results of this study shows that preoperative administration of IV perfalgan in elective caesarean section patients has significant relief in the postoperative pain and the time of analgesic requirement is also prolonged in the preemptive group. During antenatal period, in all the three trimesters and during breast feeding , the widely accepted drug as analgesic and antipyretic is paracetamol. [62] The results reviewed in the literature shows that it is a drug of safety when used in therapeutic doses both for the mother and the fetus though it crosses the placenta.[63] In many major surgeries, its efficacy and safety has been documented.[64] The common adverse effects of NSAIDS like bleeding and dyspepsia is not commonly observed with paracetamol. The feasibility of its administration is mainly due to the availability of IV form of perfalgan.

It is proved that preemptive administration of perfalgan provides superior pain relief in the postoperative period compared to placebo and the time of first analgesic requirement is also prolonged in the preemptive group when compared to other group .Preemptive analgesia is considered nowadays as a more effective mode of pain relief in the postoperative period by reducing the peripheral sensitization and interrupting the conduction of perioperative stimuli to the medulla spinalis which is very harmful by providing effective analgesia before the exogenous stimuli which is detrimental.[65]This type of analgesia is also used as a contemporary method in the treatment of postoperative pain. There are lot of studies in the effectiveness of analgesics by giving it at the end of the surgery or after the delivery of the newborn , but only a few studies in the effectiveness of analgesia when given preemptively. In this study, the analgesic been given before the surgery because of its availability of IV preparation and also its applicability in the pregnant women Other variables like maternal vital parameters- pulse rate, blood pressure , SPO 2, postoperative complications, breast feeding ,wound sensitivity, ambulation day, NICU admission, baby APGAR scores were also compared between the two groups.

COMPARISON OF AGE:

In our study group, the mean age group of the patients were comparable in both the groups. There were no significant statistical difference between the two groups. The maximum number of the patients in both the groups is around 26 – 30 years. The mean age in the study group – 27.81 years. The mean age in the control group-28.95 years. The P value for the age is 0.08

COMPARISON OF PARITY:

It is seen that there is no statistical difference in the parity between both the groups. Majority of the patients in the groups comes under multi parity. The P value for the parity is 0.2.

COMPARISON OF GESTATIONAL AGE:

From our study it is shown that there is no statistical significant difference between the gestational age in both the groups. The mean gestational age in the study group -37.86. The mean gestational age in the control group-37.85. The P value for the gestational age -0.89. All the patients in both the groups are booked in PSG.

COMPARISON OF ASA STATUS:

As a status is comparable between the study group and the control group. Majority of the patients fits under ASA 2.

INDICATIONS FOR CAESAREAN SECTION:

It is seen that 86.3% patients in the study group had indication of previous caesarean section and in the control group it comes around 78.8%. 5% in the study group and 12.5% in the control group constitutes caesarean section for breech presentation. Other indications are maternal wish, placenta previa, unstable lie, big baby, CPD, previous myomectomy. The other indications constitutes around 3- 5%

COMPARISON OF HEMODYNAMIC PARAMETERS:

Hossam et al [2] in his study which is a comparison between preemptive analgesia and preventive analgesia with IV perfalgan in elective caesarean section states that hemodynamic

parameters – heart rate, systolic blood pressure and diastolic blood pressure was significantly higher in the preventive group from the time of intubation to the delivery of the baby (p value is < 0.001)and in the immediate postoperative period but the hemodynamic parameters are significantly higher in the preemptive group when compared to preventive group in the postoperative period and the p value is< 0.001) and it is also shown that there is no significant statistical difference between the two groups with regards to heart rate, systolic blood pressure and diastolic blood pressure in the preoperative, intraoperative and in 1^{st} and 2^{nd} hours of postoperative period. The preventive group showed lower SPO 2 than preemptive group in the immediate postoperative period with significant P value (< 0.01) and no significant statistical difference between the two groups with regards to SPO 2 in the preoperative , intraoperative and in the immediate postoperative period.

Indira Kumari et al [66] in his study states that in the comparison between the preemptive and preventive group with the vital parameters in the immediate postoperative period there was significantly higher heart rate in the preemptive group than preventive group (p value < 0.05) and in the rest of the time period , the results were comparable between the two groups (p>0.05). In the immediate postoperative period, the systolic blood pressure was significantly higher in the study group when compared to control group (P value < 0.05) and in the rest of postoperative period there were no significant statistical differences and the same goes for diastolic blood pressure which shows significant difference in the immediate postoperative period than the other time intervals. It is shown that there were no significant statistical differences between the SPO 2 in all the time intervals between both the groups.

Intra operatively the parameters were significantly higher in the preventive group when compared to preemptive group comparing to the above study - the results of our study shows that

mean pulse rate in the study group is around 81 beats per minute and the mean pulse rate in the control group is around 82 beats per minute . There was no statistical difference in the pulse rate in both the groups (p value < 0.5).

The mean systolic blood pressure in the preemptive group is 114 and in the control group is around 111 and there was no statistical difference between the two groups in regards to systolic blood pressure (P value 0.06). The mean diastolic pressure in the study group is 70 and the mean diastolic pressure is 69. There were no statistical difference between the two group (p value – 0.75). It is seen from the above statistics that preemptive analgesia with IV perfalgan has no effect in the hemodynamic parameters when compared to placebo

COMPARISON OF TIME OF FIRST ANALGESIC REQUIREMENT BETWEEN THE TWO GROUPS:

Musthafa Arslan et al[67] in his study comparing the effects of preemptive analgesia with preventive analgesia with IV perfalgan in elective caesarean cases shows that the time of first analgesic requirement was significantly higher in both preemptive and preventive groups when compared to placebo and the time interval is comparatively higher in the preemptive group than preventive group. The time of first analgesic requirement in the preemptive group is around 153 minutes and in the preventive group is 91 minutes. The opioid consumption was also lower in the preemptive group then the other two groups. 43% of the preemptive group and 66% of the preventive group required supplementary analgesics.

Hossam et al[2] in his study states that the cumulative requirement dose for fentanyl is significantly higher in the preventive analgesia group when compared to preemptive group. The time of analgesia requirement was 6 hours after surgery in case of preemptive group and the time

of first analgesic requirement was 4 hours in case of preventive group. The time of postoperative analgesia requirement is comparatively higher in preemptive group when compared to preventive group (P value < 0.001)

Indira Kumari et al[66] in her study states that time of first analgesic requirement was 2 hours in preemptive group and in the preventive group is around 3-4 hours. But intra operatively, the patients in the preventive group received fentanyl due to > 25% increase in the heart rate.

Simin Atashkhoyi et al[49] in his study also shows that the time of first analgesic consumption after preventive analgesia with IV perfalgan in elective caesarean section was longer than the control group (P value <0.0001). In our study, the mean time of first analgesic requirement in the preemptive group is around 5.85 hours and the mean time interval of first analgesic requirement is around 2.7 hours. Hence there is significant difference between the study and the control group in the time of first analgesic requirement

COMPARISON OF SEDATION REQUIREMENT:

All the patients in the control group required sedation and 8 patients out of 80 in the study group does not required sedation. The P value is found to be 0.08. Though it is not statistically significant, the sedation requirement is comparatively lesser in the preemptive group when compared to control group. Hossam et al[2] states that there were no significant statistical differences between the sedation requirement in the preemptive and preventive analgesia group.

POSTOPERATIVE COMPLICATIONS:

From the results, it is seen that there were no major complications in both the groups. 2.6% of patients in the study group had vomiting in the postoperative period and 3.9% in the control group had nausea and vomiting. 6 patients in the case group had postpartum haemorrhage and only one patient in the control had postpartum haemorrhage. More then 90% of patients had no major complications in both the groups. INDIRA KUMARI et al[66] in her study shows that no patients in the preemptive and preventive group with IV perfalgan had postoperative complications like nausea and vomiting, urinary retention in the postoperative period.

Ozlem Ozmete et al[68] in his study shows that there were no statistically significant differences in the preemptive and control group in the nausea and vomiting in elective caesarean cases.

FREQUENCY OF BREAST FEEDING:

The comparison of frequency of breast feeding in the first 24 hours postpartum between the two groups shows that there is increased number of breast feeding frequency in the preemptive group. Maximum frequency of breast feeding in the pre emptive group is around 5-6 times and the maximum number of breast feeding in the control group is around 3 – 4 times. The mean breast feeding in the study group is 5.34 and the mean breast feeding in the control group is 3.64. The P value is < 0.05 and is found to be significant.

COMPARISON OF WOUND SENSITIVITY:

The sensitivity of the wound in the preemptive group is around 6 hours after surgery and in the control group is around 4 hours comparatively earlier than the preemptive group. The

mean wound sensitivity in the study group is 6.04 and the mean wound sensitivity is 4.18. The P value is <0.05 and is found to be statistically significant.

COMPARISON OF PAIN SCORES IN THE POSTOPERATIVE PERIOD BY VISUAL ANALOG SCALE:

Simin Atashkhoyi et al[49] studied the efficacy of preventive analgesia with IV paracetamol in elective caesarean section and results shows that the VAS pain score was significantly lower in the study group upto 4 hours after surgery (P value<0.001) and though not significant the pain scores was lower upto 24 hours after surgery in some patients in the preventive group when compared to control group (P value -0.09). It is also shown that the analgesic consumption was also lower in the study group when compared to control group.

Hossam et al[2] in his study comparing the effects of preemptive versus preventive analgesia in elective caesarean section states that the postoperative VAS pain scores was higher in the preemptive group 6 hours after surgery and 4 hours in the preventive group and also intraoperative fentanyl requirement was also higher in the preventive group when compared to preemptive group but there were no significant statistical differences between the postoperative pethidine requirement in both the groups.

Arslan M et al[67] studied the efficacy of IV paracetamol when given preemptively reducing the opioid consumption in the postoperative period in patients undergoing cholecystectomy states that the VAS pain scores in the preemptive group was significantly lower even at 24 hours after surgery when compared to preventive group and also the total analgesic consumption was also lower in the preemptive group when compared to control group.

Indira Kumari et al[66] in her study comparing the preemptive versus preventive analgesia in pyelolithotomy surgery states that VAS pain score was significantly higher in the preventive group when compared to preemptive group but the intraoperative fentanyl requirement is significantly higher in the preventive group due to intraoperative stress when compared to preemptive group. No patients in the preemptive group required fentanyl.

Ozlem Ozmete et al [68] in his study comparing the efficacy of preemptive analgesia with IV perfalgan in elective caesarean cases shows that the postoperative VAS pain scores was significantly lower in all the groups at 0,2,4,6,12 hours but not at 24 hours in the preemptive group and the morphine consumption also significantly lower in the preemptive group when compared to the control group in whom the patients required additional analgesic requirement.

Comparing to the above studies , the results of our study shows the preemptive analgesia with IV perfalgan has statistically significant lower VAS pain scores at 2, 4, 6, 12 hours after surgery (P value< 0.01) except at 30 mins and 24 hours where the patient in the preemptive group exhibit higher pain score when compared to the control group. It is also shown that the intensity of the pain is lower in the preemptive group when compared to control group. In the preemptive group , the mean mild pain starts from 6 hours when compared to 4 hours in the control group , the moderate pain starts from 11 hours in the study group and 7 hours in the control group and the mean severe pain in the study group is 17 hours and 11 hours in control group.

COMPARISON OF APGAR SCORES AND NICU ADMISSION:

From the above results, it is clearly shown that there is no statistically significant difference between the apgar scores of the baby at 1 min and 5 mins respectively (P value at 1min is 0.52 and the P value at 5mins -0.81). The mean apgar at 1min in the study group is 7.86 and the mean apgar in the control group is 7.78 and also the mean apgar at 5 mins in the study group is 8.93 and the mean apgar in the control group is 8.92. The percentage of babies admitted in NICU is around 20% in the study group comparatively higher than the control group which is around 13%. The mean birth weight in the study group is around 2.9 and the mean weight in the control group is around 3.04 kg.

LIMITATIONS

The limitation of this study is in the assessment of postoperative pain scores by visual analog scale. The pain scores may not be accurate due to patient bias and there is individual variation in the perception of pain. More studies with large numbers has to be done in the future in preemptive analgesia as there are only limited studies with small numbers been done .

CONCLUSION

Although there are limited studies in the preemptive analgesia and its efficacy, still preemptive analgesia is proven to be effective in the treatment of acute early postoperative pain. Postoperative pain relief is significant for the mother after caesarean sections for early mobilization, for good interaction between the mother and the infant, frequent breast feeding and increased ability of the mother to care her infant. The conclusion of this study is that preemptive analgesia with IV perfalgan in elective caesarean section has lesser pain scores in the immediate postoperative period and also the time of first analgesic requirement is longer in the preemptive group when compared to control group. More studies with large numbers has to be done in the efficacy of preemptive analgesia in the future.

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PSG Institute of Medical Sciences & Research
Institutional Human Ethics Committee

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To
Dr Kamala Swarnamani
Postgraduate
Department of Obstetrics & Gynaecology
Guides: Dr Reena Abraham
PSG IMS & R
Coimbatore

Ref: Project No.15/438

Date: December 30, 2015,

Dear Dr Kamala,

Institutional Human Ethics Committee, PSG IMS&R reviewed and discussed your application dated 28.12.2015 to conduct the research study entitled *"Preemptive analgesia with IV perfalgan elective caesarean patients and its effect in postoperative pain relief"* during the IHEC review meeting held on 28.12.2015.

The following documents were reviewed and approved:

1. Project Submission form
2. Study protocol (Version 1 dated 28.12.2015)
3. Informed consent forms (Version 1 dated 28.12.2015)
4. Data collection tool (Version 1 dated 28.12.2015)
5. Current CVs of Principal investigator, Co-investigator
6. Budget

The following members of the Institutional Human Ethics Committee (IHEC) were present at the meeting held on 28.12.2015 at Research Conference Room, PSG IMS & R between 10.00 am and 12.30 pm:

Sl. No.	Name of the Member of IHEC	Qualification	Area of Expertise	Gender	Affiliation to the Institution Yes/No	Present at the meeting Yes/No
1	Mrs Y Ashraf	MPT	Physiotherapy	Female	Yes	Yes
2	Dr. S. Bhuvaneshwari (Member-Secretary, IHEC)	MD	Clinical Pharmacology	Female	Yes	Yes
3	Mr Gowpathy Velappan	BA., BL	Legal Advisor	Male	No	No
4	Dr A Jayavardhana	MD	Clinician (Paediatrics)	Male	Yes	Yes
5	Mr P Karuppuchamy	M Phil in PSW	Social Scientist	Male	Yes	Yes
6	Mrs G Malarvizhi	M Sc	Nursing	Female	Yes	Yes
7	Mr. R. Nandakumar (Chairperson, IHEC)	BA., BL	Legal Expert	Male	No	Yes

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8	Dr. Parag K Shah	DNB	Clinician (Ophthalmology)	Male	No	No
9	Dr. G. Rajendiran	DM	Clinician (Cardiology)	Male	Yes	Yes
10	Mrs P Rama	M Pharm	Non-Medical (Pharmacy)	Female	Yes	Yes
11	Dr. Seetha Panicker (Vice-chairperson, IHEC)	MD	Clinician (Obstetrics & Gynaecology)	Female	Yes	Yes
12	Dr R Senthil Kumar	MD	Clinician (Endocrinology)	Male	Yes	Yes
13	Dr. S. Shanthakumari	MD	Pathology, Ethicist	Female	Yes	Yes
14	Dr. Sudha Ramalingam (Alternate Member-Secretary, IHEC)	MD	Public Health, Epidemiology, Genetics, Ethicist	Female	Yes	Yes
15	Mrs. Swasthika Soundararaj	MBA	Lay person	Female	No	Yes
16	Dr. D. Vijaya	M Sc, Ph D	Basic Medical Sciences (Biochemistry)	Female	Yes	Yes

The study is approved in its presented form. The decision was arrived at through consensus. Neither PI nor any of proposed study team members were present during the decision making of the IHEC. The IHEC functions in accordance with the ICH-GCP/ICMR/Schedule Y guidelines. The approval is valid until one year from the date of sanction. You may make a written request for renewal / extension of the validity, along with the submission of status report as decided by the IHEC.

Following points must be noted:

1. IHEC should be informed of the date of initiation of the study
2. Status report of the study should be submitted to the IHEC every 12 months
3. PI and other investigators should co-operate fully with IHEC, who will monitor the trial from time to time
4. At the time of PI's retirement/intention to leave the institute, study responsibility should be transferred to a colleague after obtaining clearance from HOD, Status report, including accounts details should be submitted to IHEC and extramural sponsors
5. In case of any new information or any SAE, which could affect any study, must be informed to IHEC and sponsors. The PI should report SAEs occurred for IHEC approved studies within 7 days of the occurrence of the SAE. If the SAE is 'Death', the IHEC Secretariat will receive the SAE reporting form within 24 hours of the occurrence
6. In the event of any protocol amendments, IHEC must be informed and the amendments should be highlighted in clear terms as follows:
   a. The exact alteration/amendment should be specified and indicated where the amendment occurred in the original project. (Page no. Clause no. etc.)
   b. Alteration in the budgetary status should be clearly indicated and the revised budget form should be submitted
   c. If the amendments require a change in the consent form, the copy of revised Consent Form should be submitted to Ethics Committee for approval
   d. If the amendment demands a re-look at the toxicity or side effects to patients, the same should be documented
   e. If there are any amendments in the trial design, these must be incorporated in the protocol, and other study documents. These revised documents should be submitted for approval of the IHEC and only then can they be implemented

PSG Institute of Medical Sciences & Research
Institutional Human Ethics Committee

Recognized by The Strategic Initiative for Developing Capacity in Ethical Review (SIDCER)
POST BOX NO. 1674, PEELAMEDU, COIMBATORE 641 004, TAMIL NADU, INDIA
Phone : 91 422 - 2598822, 2570170, Fax : 91 422 - 2594400, Email : ihec@psgimsr.ac.in

f. Any deviation-Violation/waiver in the protocol must be informed to the IHEC within the stipulated period for review

7. Final report along with summary of findings and presentations/publications if any on closure of the study should be submitted to IHEC

Thanking You,

Yours Sincerely,

SECRETARY
PSG IMS&R
COIMBATORE-641004
INSTITUTIONAL HUMAN ETHICS COMMITTEE

Dr S Bhuvaneshwari
Member - Secretary
Institutional Human Ethics Committee

PSG Institute of Medical Science and Research, Coimbatore
Institutional Human Ethics Committee
INFORMED CONSENT FORMAT FOR RESEARCH PROJECTS

(strike off items that are not applicable)

I, **DR. KAMALA SWARNAMANI,** am carrying out a study on the topic: **PREEMPTIVE ANALGESIA IV PERFALGAN IN ELECTIVE CAESAREAN PATIENTS AND ITS EFFECT IN POSTOPERATIVE PAIN RELIEF** as part of my research project being carried out under the aegis of the Department of: **OBSTETRICS AND GYNAECOLOGY, PSG IMSR**

My research guide is: DR. REENA ABRAHAM, M.D, DGO.,

The justification for this study is: The study is done mainly to justify that preoperative administration of IV Perfalgan has better pain relief in elective caesarean patients in the postoperative period

The objectives of this study are:
To ensure the efficacy of IV Perfalgan given preemptively in elective caesarean patients in decreasing postoperative pain by analysing Visual pain Analogue Scale

Sample size: STUDY GROUP - 80
CONTROL GROUP-80

Study volunteers / participants are (specify population group & age group): Low risk antenatal patients who are posted for elective LSCS

Location: PSG IMS&R, Hospitals, Coimbatore

We request you to kindly cooperate with us in this study. We propose collect background information and other relevant details related to this study. We will be carrying out:

Initial interview (specify approximate duration):___10__ minutes.

Data collected will be stored for a period of __5_ years. We will / will not use the data as part of another study.

Final interview ___10_ mts.

Benefits from this study:

1. Preoperative administration with IV Perfalgan has better pain relief in the postoperative period

2. to assess the post operative pain relief period in perfalgan group and control group

Risks involved by participating in this study: NIL

How the **results** will be used: Can show positive correlation or negative correlation.

From this we will able to find out the post operative pain relief period in elective caesarean patients with IV Perfalgan given preemptively

If you are uncomfortable in answering any of our questions during the course of the interview / biological sample collection, **you have the right to withdraw from the interview / study at anytime.** You have the freedom to withdraw from the study at any point of time. Kindly be assured that your refusal to participate or withdrawal at any stage, if you so decide, will not result in any form of compromise or discrimination in the services offered nor would it attract any penalty. You will continue to have access to the regular services offered to a patient. You will **NOT** be paid any remuneration for the time you spend with us for this interview / study. The information provided by you will be kept in strict confidence. Under no circumstances shall we reveal the identity of the respondent or their families to anyone. The information that we collect shall be used for approved research purposes only. You will be informed about any significant new findings - including adverse events, if any, – whether directly related to you or to other participants of this study, developed during the course of this research which may relate to your willingness to continue participation.

Consent: The above information regarding the study, has been read by me/ read to me, and has been explained to me by the investigator/s. Having understood the same, I hereby give my consent to them to interview me. I am affixing my signature / left thumb impression to indicate my consent and willingness to participate in this study (i.e., willingly abide by the project requirements).

Signature / Left thumb impression of the Study Volunteer / Legal Representative:

Signature of the Interviewer with date: Witness:

Contact number of PI: 73737 45807

Contact number of Ethics Committee Office: During Office hours : 0422 2570170 Extn.: 5818
After Office hours : 9865561463

பூ. சா. கோ மருத்துவக் கல்லூரி மற்றும் ஆராய்ச்சி நிறுவனம், கோவை

மனித நெறிமுறைக் குழு

ஒப்புதல் படிவம்

தேதி:

மரு. கமலா சுவர்ணமணி ஆகிய நான் பூ. சா. கோ மருத்துவக் கல்லூரியின் / மருத்துவமனையின் மகப்பேறு மருத்துவ துறையின் கீழ், **"சிசேரியன் அறுவை சிகிச்சைக்கு முன் IV பெர்ஃபால்கன் செலுத்துவதினால் அறுவை சிகிச்சைக்கு பிற்காலத்தில் ஏற்படும் வலி நிவாரணம்"** என்ற தலைப்பில் ஆய்வு மேற்கொள்ள உள்ளேன்.

என் ஆய்வு வழிகாட்டி: மரு. ரீனா அப்ரஹாம்

ஆய்வு மேற்கொள்வதற்கான அடிப்படை:

இந்த ஆய்வின் குறிக்கோளாகப்பட்டது அறுவை சிகிச்சைகு முன் IV பெர்ஃபால்கன் கொடுக்கப்படின் சிகிச்சையின் பின்னர் அதிக வலி நிவாரணம் ஏற்படும்.

ஆய்வின் நோக்கம்:

சிசேரியன் அறுவை சிகிச்சைக்கு முன் IV பெர்ஃபால்கன் செலுத்துவதனால் அறுவை சிகிச்சைக்குப் பிற்காலத்தில் சிறந்த வலி நிவாரணம் உள்ளது

ஆய்வில் பங்கு பெறும் நபர்களின் எண்ணிக்கை: 160

ஆய்வில் பங்கு பெறுவோர் மற்றும் வயது: கர்ப்பிணி பெண்கள்.

ஆய்வு மேற்கொள்ளும் இடம்: மகப்பேறு பிரிவு, பூ. சா. கோ மருத்துவக் மற்றும் கல்லூரி மருத்துவமனை, கோயமுத்தூர்.

இந்த ஆய்வில் எங்களுடன் ஒத்துழைக்குமாறு கேட்டுக்கொள்கிறோம். நாங்கள் சில தகவல்களை இந்த ஆய்விற்காக சேகரிக்க உள்ளோம்.

ஆய்வு செய்யப்படும் முறை

சிசேரியன் அறுவை சிகிச்சைக்காக அரை மணி நேரத்திற்கு முன்னதாக கொடுக்கும் IV பாரசிட்டமால் அறுவை சிகிச்சைக்குப்பின் சிறந்த வலி நிவாரணி என்று விசுவல் அனலாக் எண்ணிக்கையின் மூலம் ஆய்வு செய்யப்படுகிறது.

முதன்மை நேர்காணல்: **10 நிமிடங்கள்**

இந்த ஆய்வில் கிடைக்கும் தகவல்கள் **5 வருடங்கள்** பாதுகாக்கப்படும். இந்த தகவல்கள் வேறு ஆய்விற்குப் பயன்படுத்தப் படும்/பயன்படுத்தப் பட மாட்டாது.

மருத்துவ பரிசோதனைகள்:

இரத்த மாதிரி சேகரிப்பு: இல்லை

இரத்த மாதிரி எடுப்பது வழக்கமான சிகிச்சைக்காகவோ அல்லது இந்த ஆய்விற்காகவோ: இல்லை

இதனால் ஏற்படக் கூடிய அசௌகரியங்கள் / பக்க விளைவுகள்: இதனால் எந்த அசௌகரியமோ, பக்க விளைவுகளோ ஏற்படாது.

இரத்த மாதிரிகள் ஆய்விற்குப் பின் பாதுகாத்து வைக்கப்படுமா? ஆம் / இல்லை, அழிக்கப்படும்: **இல்லை**

சேகரிக்கப்பட்ட இரத்தம் விற்கப்படுமா? ஆம் / இல்லை **இல்லை**

சேகரிக்கப்பட்ட இரத்தம் வேறு நிறுவனத்துடன் பகிர்ந்து கொள்ளப்படுமா? ஆம் / இல்லை: **இல்லை**

மருந்துகள் ஏதேனும் கொடுக்கப்படவிருந்தால் அவை பற்றிய விவரம் (கொடுக்கப்படும் காரணம், காலம், பக்க விளைவுகள், பயன்கள்)

IV பாரசிட்டமால் - ஓபியாய்டு அல்லாத வலி நிவாரணி

மருந்துகள் கொடுக்கப்படுவது வழக்கமான சிகிச்சை முறையா? ஆம்

கொடுக்கப்படும் மருந்துகளுக்கு மாற்று உள்ளதா? இல்லை

ஆய்வில் பங்குபெறுவதால் ஏற்படும் பலன்கள்:

சிசேரியன் அறுவை சிகிச்சைக்கு முன் பாரசிட்டமால் தருவதினால் அறுவை சிகிச்சைக்குப் பிற்காலத்தில் சிறந்த வலி நிவாரணம் தருவதாக உள்ளது.

இந்த ஆய்வின் கேள்விகளுக்கு பதிலளிப்பதோ, இரத்த மாதிரிகள் அல்லது திசு மாதிரிகள் எடுப்பதிலோ உங்களுக்கு ஏதேனும் அசௌகரியங்கள் இருந்தால், எந்த நேரத்தில் வேண்டுமானாலும் ஆய்விலிருந்து விலகிக்கொள்ளும் உரிமை உங்களுக்கு உண்டு. எப்பொழுது வேண்டுமானாலும் ஆய்விலிருந்து விலகும் உரிமை உங்களுக்கு உள்ளது. ஆய்விலிருந்து விலகிக்கொள்வதால் உங்களுக்கு அளிக்கப்படும் சிகிச்சை முறையில் எந்த வித பாதிப்பும் இருக்காது என்று உங்களுக்கு உறுதியளிக்கிறோம். மருத்துவ மனையில் நோயாளிகளுக்கு அளிக்கப்படும் சேவைகளை நீங்கள் தொடர்ந்து பெறலாம். இந்த ஆய்வில் பங்கேற்க ஒப்புக்கொள்ளுவதால் வேறு எந்த விதமான கூடுதலான பலனும் உங்களுக்குக் கிடைக்காது. நீங்கள் அளிக்கும் தகவல்கள் இரகசியமாக வைக்கப்படும். ஆய்வில் பங்கேற்பவர்கள் பற்றியோ அவர்கள் குடும்பத்தைப் பற்றியோ எந்தத் தகவலும் எக்காரணம் கொண்டும் வெளியிடப்படாது என்று

உறுதியளிக்கிறோம். நீங்கள் அளிக்கும் தகவல்கள் / இரத்த மாதிரிகள் / திசு மாதிரிகள் அங்கீகரிக்கப்பட்ட ஆய்விற்கு மட்டுமே பயன்படுத்தப்படும். இந்த ஆய்வு நடைபெறும் காலத்தில் குறிப்பிடத்தகுந்த புதிய கண்டுபிடிப்புகள் அல்லது பக்க விளைவுகள் ஏதும் ஏற்பட்டால் உங்களுக்குத் தெரிவிக்கப்படும். இதனால் ஆய்வில் தொடர்ந்து பங்கு பெறுவது பற்றிய உங்கள் நிலைப்பாட்டை நீங்கள் தெரிவிக்க ஏதுவாகும்.

ஆய்வுக்குட்படுபவரின் ஒப்புதல்: இந்த ஆய்வைப் பற்றிய மேற்கூறிய தகவல்களை நான் படித்து அறிந்து கொண்டேன் / ஆய்வாளர் படிக்கக் கேட்டுத் தெரிந்து கொண்டேன். ஆய்வினைப் பற்றி நன்றாகப் புரிந்து கொண்டு இந்த ஆய்வில் பங்கு பெற ஒப்புக்கொள்கிறேன். இந்த ஆய்வில் பங்கேற்பதற்கான எனது ஒப்புதலை கீழே கையொப்பமிட்டு . கை ரேகை பதித்து நான் தெரிவித்துக் கொள்கிறேன்.

பங்கேற்பாளரின் பெயர், முகவரி:

பங்கேற்பாளரின் கையொப்பம் / கை ரேகை / சட்டப்பூர்வ பிரதிநிதியின் கையொப்பம்:

தேதி :

ஆய்வாளரின் கையொப்பம் :
தேதி :

ஆய்வாளரின் தொலைபேசி எண்:
மனித நெறிமுறைக் குழு அலுவலகத்தின் தொலைபேசி எண்:
அலுவலக நேரத்தில்0422 2570170 Extn.: 5808
அலுவலக் நேரத்திற்குப்பின்: 9865943043

PROFORMA

NAME :

AGE :

SNO :

OP NO :

IP NO :

UNIT :

MENSTRUAL H/O:

OBSTETRIC HISTORY:

ANTENATAL COMPLICATION:

PAST HISTORY:

O/E:

PR:

BP:

TEMP:

PALLOR:

ICTERUS:

CVS:

RS:

P/A:

UTERINE HEIGHT:

PRESENTING PART:

FETAL HEART:

NON STRESS TEST:

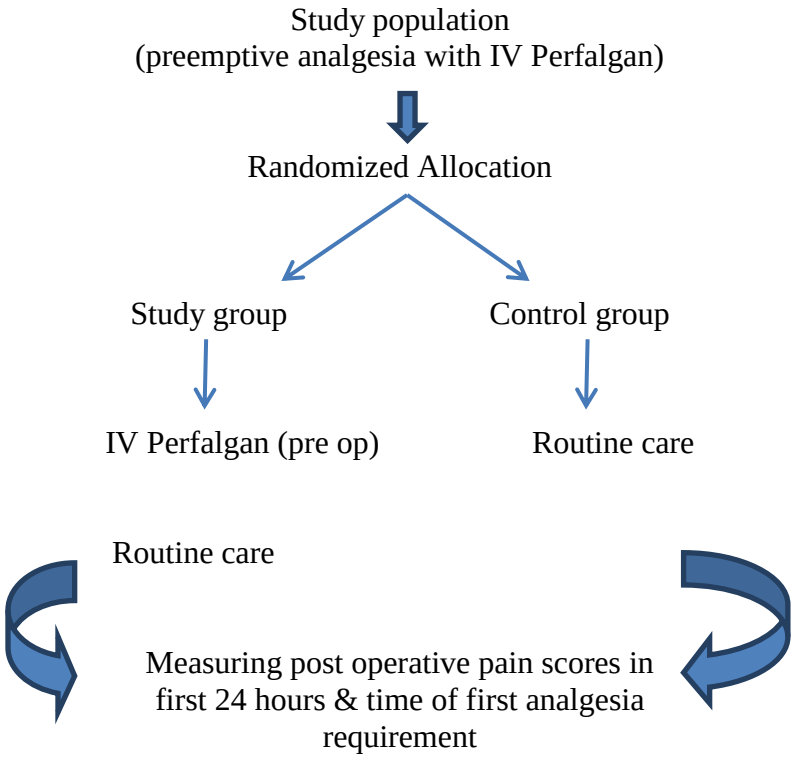
MODE OF DELIVERY:

INDICATION:

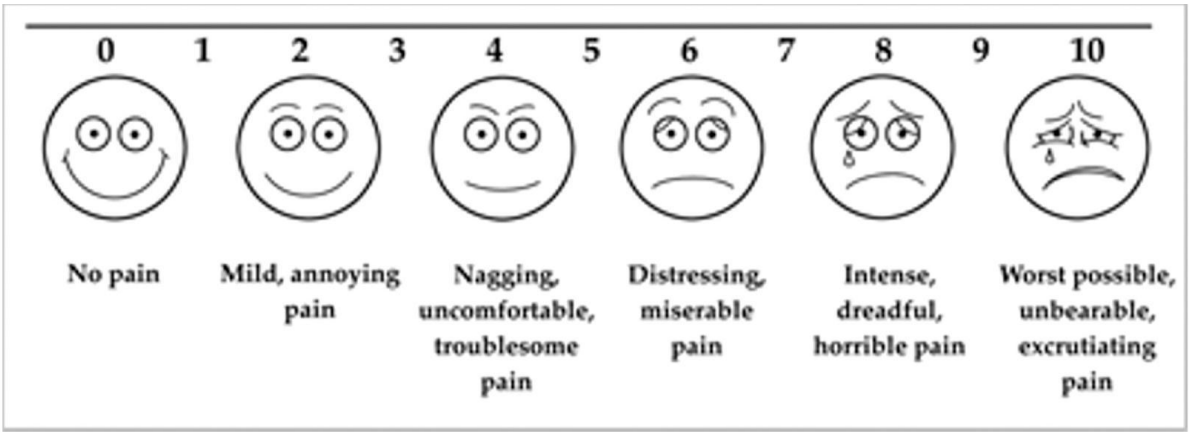
PREEEMPTIVE ANALGESIA:

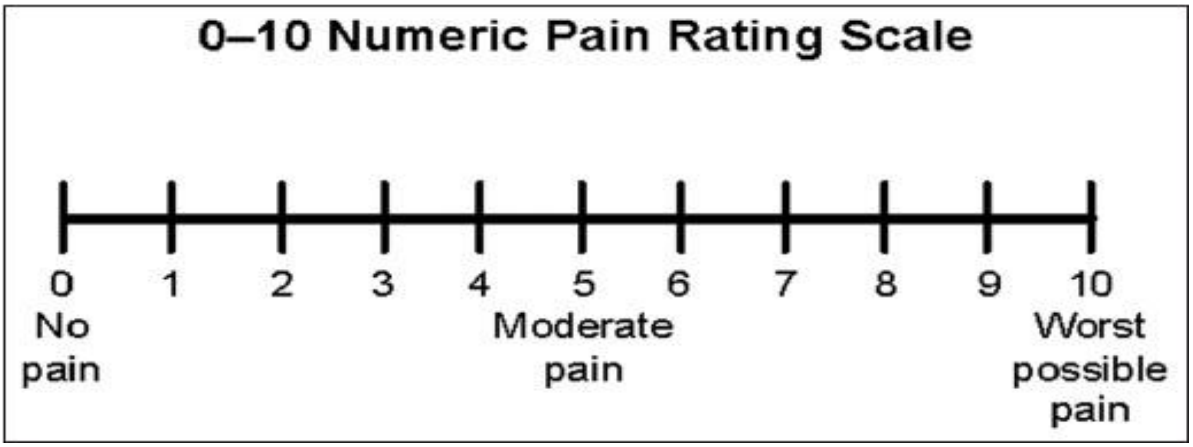
POSTOPERATIVE PERIOD: ASSESMENT OF PAIN IN THE RECOVERY BY VISUAL ANALOG SCORE

PROTOCOL



PAIN SCORE ASSESSMENT BY VISUAL ANALOG SCALE





PAIN SCORES:

30 minutes after Surgery :

2hrs after Surgery :

4hrs after Surgery :

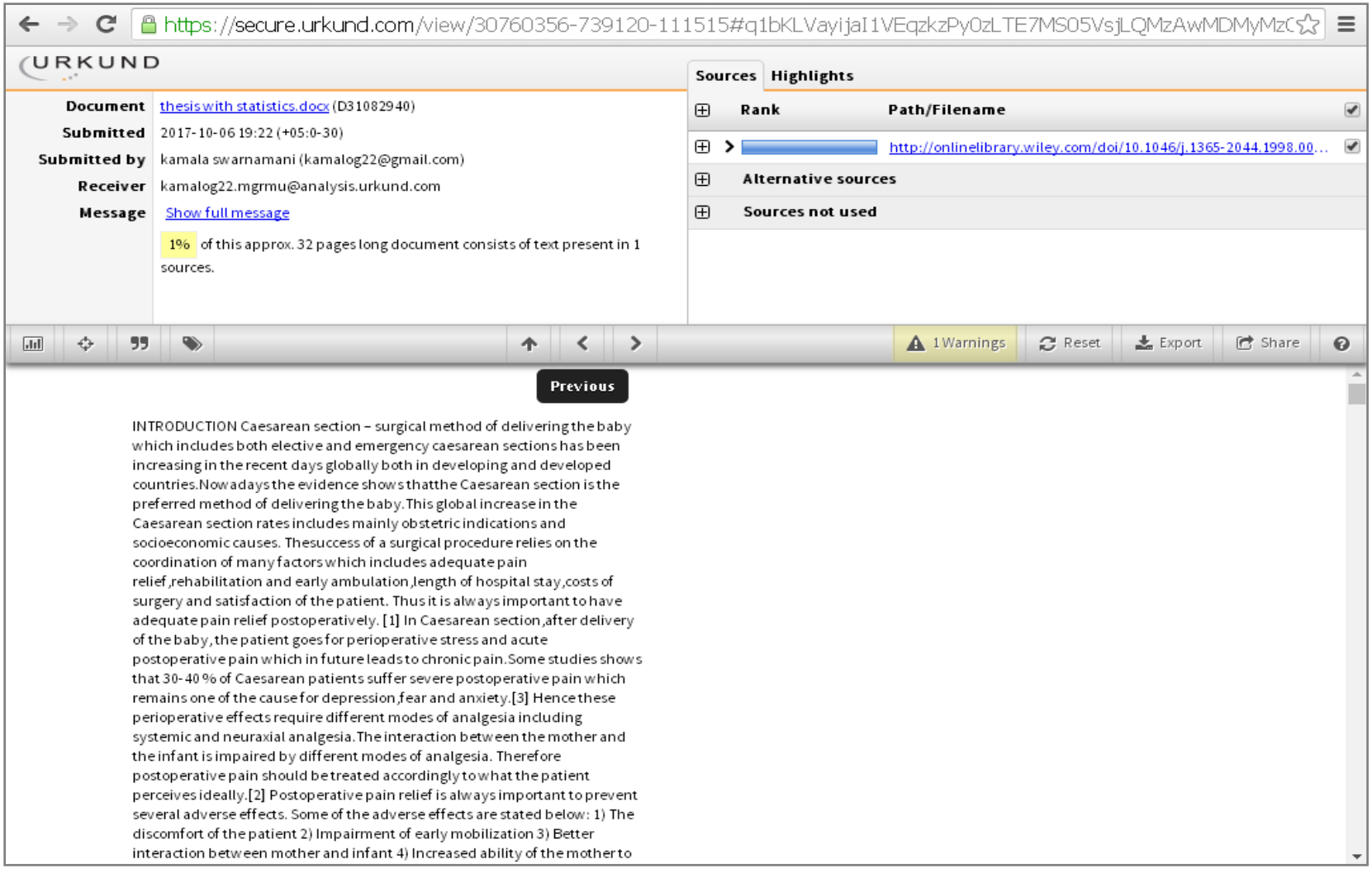
6 hrs after Surgery :

8hrs after Surgery :

10hrs after Surgery :

12 hrs after Surgery :

24hrs after Surgery :


https://secure.urkund.com/view/30760356-739120-111515#q1bKLVayijaI1VEqzkzPy0zLTE7MS05VsjLQMzAwMDMyMzC
URKUND
Sources
Highlights
Document
thesis with statistics.docx (D31082940)
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INTRODUCTION Caesarean section – surgical method of delivering the baby which includes both elective and emergency caesarean sections has been increasing in the recent days globally both in developing and developed countries.Nowadays the evidence shows thatthe Caesarean section is the preferred method of delivering the baby.This global increase in the Caesarean section rates includes mainly obstetric indications and socioeconomic causes. Thesuccess of a surgical procedure relies on the coordination of many factors which includes adequate pain relief,rehabilitation and early ambulation,length of hospital stay,costs of surgery and satisfaction of the patient. Thus it is always important to have adequate pain relief postoperatively. [1] In Caesarean section,after delivery of the baby, the patient goes for perioperative stress and acute postoperative pain which in future leads to chronic pain.Some studies shows that 30-40 % of Caesarean patients suffer severe postoperative pain which remains one of the cause for depression,fear and anxiety.[3] Hence these perioperative effects require different modes of analgesia including systemic and neuraxial analgesia.The interaction between the mother and the infant is impaired by different modes of analgesia. Therefore postoperative pain should be treated accordingly to what the patient perceives ideally.[2] Postoperative pain relief is always important to prevent several adverse effects. Some of the adverse effects are stated below: 1) The discomfort of the patient 2) Impairment of early mobilization 3) Better interaction between mother and infant 4) Increased ability of the mother to

MASTER CHART

NAME	AGE	IP NO	PARITY	GA	B/UB	SURGERY	IND	ASA	PR	SYS BP	DIA BP	SPO2	COMP	VAS 1ST	VAS 30min	2HOURS	4 HOURS	6 HOURS	8 HOURS	10 HOURS	12HOURS	24HOURS	SEDATION	COMP	BF(DAY 1)	W.S(hours)	AMB(DAY)	B.W	NICU	APGAR	mild pain	mod.pain	severe pain
KAVITHA	27	i16012378	MULTI	38	BOOKED	1	PRE LSCS	2	80	110	70	100	anemia	5	0	0	0	4	2	2	4	4	YES	NIL	6	6	DAY 1	2.6	-	8/10,9/10	6	12	18
J.LINE	30	i16011391	MULTI	38	BOOKED	1	PRE LSCS	2	82	100	60	99	nil	5	0	0	2	4	0	2	3	4	YES	NIL	5	5	DAY1	3.2	-	8/10,9/10	6	10	16
P.GODI	34	i16014402	MULTI	38	BOOKED	1	PRE LSCS	2	81	120	70	99	GDM	4	0	0	3	2	2	4	2	4	YES	NIL	7	4	DAY1	3.06	NICU	7/10,8/10	5	10	14
S.LAXMI	39	i16011388	MULTI	38	BOOKED	1	PRE LSCS	1	60	130	80	98	anemia	6	0	0	2	4	2	2	4	6	YES	NIL	7	6	DAY1	2.52	-	8/10,9/10	6	12	16
J.LAXMI	32	i16001036	MULTI	38	BOOKED	1	PRE LSCS	2	62	100	60	99	GDM	5	0	0	2	4	2	2	5	5	YES	NIL	6	6	DAY1	3.1	NICU	8/10,9/10	6	12	15
VANITHA	28	i16013789	MULTI	37	BOOKED	1	PRE LSCS	2	74	110	70	100	nil	6	0	0	0	4	3	4	2	6	YES	NIL	4	6	DAY1	2.89	-	8/10,9/10	8	10	14
SARANYA	25	i16013614	MULTI	37	BOOKED	1	PRE LSCS	2	86	120	80	100	iugr	6	0	0	0	3	2	4	2	5	YES	NIL	7	6	DAY 1	1.5	NICU	2/10,6/10	10	12	18
J.HILDA	35	i16013127	MULTI	38	BOOKED	1	PRE LSCS	2	86	110	60	99	nil	8	0	0	0	2	4	3	4	5	YES	NIL	6	7	DAY1	2.98	-	8/10,9/10	8	12	18
R.DEVI	21	i16011333	PRIMI	37	BOOKED	1	2b p.previa	1	90	130	70	99	nil	5	0	0	0	4	2	3	4	6	YES	NIL	7	6	DAY1	2.6	-	8/10,9/10	7	12	17
BHAVANI	28	i16034845	MULTI	38	BOOKED	1	PRE LSCS	1	84	120	80	99	nil	6	0	0	0	4	0	2	3	6	YES	NIL	6	6	DAY 1	2.9	-	8/10,9/10	6	12	24
SUBASINI	24	i16034447	PRIMI	38	BOOKED	1	BREECH	2	70	110	70	99	hypo.thy	6	0	0	0	4	0	3	3	5	YES	NIL	5	6	DAY1	3.2	-	8/10,9/10	6	14	20
YASODHA	25	i16035400	MULTI	38	BOOKED	1	PRE LSCS	2	86	130	80	98	anemia	6	0	0	0	4	0	0	3	5	YES	NIL	6	6	DAY 1	2.8	-	8/10,9/10	6	12	24
JIBONISA	31	i16035197	MULTI	39	BOOKED	1	PRE LSCS	2	74	110	60	99	GDM	5	0	0	0	4	2	2	4	5	YES	NIL	7	6	DAY 1	2.94	NICU	8/10,9/10	6	10	20
RESHMA	23	i16036490	MULTI	39	BOOKED	1	PRE LSCS	2	90	110	60	97	nil	5	0	0	4	0	2	3	4	5	YES	NIL	6	5	DAY1	2.8	-	8/10,9/10	5	9	14
T.PUSHPA	30	i16037112	MULTI	38	BOOKED	1	PRE LSCS	2	86	110	70	98	nil	5	0	0	2	5	4	3	4	5	YES	NIL	5	4	DAY 1	3.14	-	8/10,9/10	4	8	12
RAMIZA	25	i16036940	MULTI	38	BOOKED	1	PRE LSCS	2	92	110	60	99	hypo.thy	6	0	0	0	4	2	2	3	6	YES	NIL	5	6	DAY 1	3.2	-	8/10,9/10	8	12	18
PRIYA	27	i16036168	MULTI	38	BOOKED	1	PRE LSCS	2	60	110	70	97	GDM	7	0	0	0	2	3	4	3	5	YES	NIL	5	7	DAY 1	3.7	NICU	8/10,9/10	8	10	20
D.LAXMI	35	i16013383	MULTI	38	BOOKED	1	PRE LSCS	2	80	90	50	99	iugr	5	0	0	0	4	2	2	4	6	YES	NIL	5	8	DAY1	2.25	NICU	8/10,9/10	8	12	16
K.VENI	27	i16035159	MULTI	38	BOOKED	2	PRE LSCS	2	98	140	80	99	nil	5	0	0	0	4	2	3	4	8	YES	NIL	6	7	DAY 1	2.5	-	8/10,9/10	7	12	15
SUDHA	34	i16036012	MULTI	38	BOOKED	1	PRE LSCS	2	55	110	70	99	nil	6	0	0	0	4	0	2	4	7	YES	NIL	6	6	DAY 1	3.36	-	8/10,9/10	7	12	16
PAVITHRA	19	i16017956	PRIMI	37	BOOKED	1	BREECH	2	80	110	60	99	oligo	6	0	0	0	4	0	2	3	6	YES	NIL	6	8	DAY 1	2.47	NICU	8/10,9/10	7	12	18
M.MEGALA	29	i16018241	MULTI	38	BOOKED	1	PRE LSCS	1	80	100	60	99	nil	5	0	0	0	4	0	0	3	8	YES	NIL	7	6	DAY 1	3.27	-	8/10,9/10	6	12	16
ROJA	22	i16018164	MULTI	38	BOOKED	1	PRE LSCS	2	76	110	70	99	nil	5	0	0	0	4	0	2	4	7	YES	NIL	6	6	DAY1	2.78	-	8/10,9/10	6	12	18
CHITRA	28	i16019004	MULTI	38	BOOKED	1	M.WISH	2	78	120	70	99	nil	6	0	0	0	4	0	2	4	6	YES	PPH	6	6	DAY1	2.6	-	8/10,9/10	6	12	16
PRAVEENA	31	i16018945	MULTI	38	BOOKED	1	PRE LSCS	2	90	110	70	99	nil	6	0	0	2	4	0	2	3	5	YES	NIL	7	6	DAY1	3.06	-	8/10,9/10	6	12	18
KALPANA	22	i16018959	MULTI	38	BOOKED	1	PRE LSCS	1	88	130	80	100	nil	6	0	0	0	3	0	3	4	8	YES	PPH	6	6	DAY 1	3.55	-	8/10,9/10	6	10	14
ANITHA	28	i16019445	MULTI	38	BOOKED	1	PRE LSCS	2	98	130	70	100	GDM	8	0	0	0	2	3	0	4	7	YES	PPH	3	6	DAY 1	3.03	NICU	8/10,9/10	6	12	14
K.WARI	29	i16019712	MULTI	38	BOOKED	1	PRE LSCS	2	76	110	70	100	nil	5	0	0	2	3	2	3	4	7	YES	PPH	5	6	DAY 1	2.92	-	8/10,9/10	5	12	15
MYTHILI	27	i16018457	MULTI	38	BOOKED	1	PRE LSCS	2	78	120	70	99	nil	5	0	0	0	4	2	4	4	6	YES	NIL	6	6	DAY 1	2.774	-	8/10,9/10	6	13	16
KALAIVANI	27	i16003763	MULTI	38	BOOKED	2	PRE LSCS	2	100	120	80	100	GGI	5	0	0	0	4	2	3	4	8	YES	NIL	7	6	DAY 1	3.08	NICU	8/10,9/10	6	12	20
MADHA	36	i16020478	MULTI	37	BOOKED	1	PRE LSCS	2	87	110	70	100	GDM	6	0	0	0	4	2	2	4	7	YES	NIL	6	8	DAY 1	3.49	NICU	8/10,9/10	6	12	24
SANTHYA	27	i16020581	MULTI	38	BOOKED	2	PRE LSCS	2	70	110	60	98	nil	6	0	0	0	4	2	3	4	6	YES	NIL	7	7	DAY1	2.4	-	8/10,9/10	7	14	18
CHITRA	25	i16019934	MULTI	38	BOOKED	1	PRE LSCS	2	88	110	70	99	hypo.thy	6	0	0	0	4	3	3	4	7	YES	PPH	6	6	DAY1	3.05	-	8/10,9/10	6	12	16
PREMA	28	i16003689	MULTI	38	BOOKED	1	PRE LSCS	2	90	120	60	99	nil	5	0	0	0	4	2	3	4	6	YES	NIL	6	6	DAY 1	3.6	-	8/10,9/10	6	12	17
SRIMATI	22	i16003796	MULTI	38	BOOKED	2	PRE LSCS	2	74	110	60	99	nil	6	0	0	0	4	0	3	4	7	YES	NIL	7	6	DAY 1	3.36	-	8/10,9/10	6	14	20
THILAGA	28	i16003741	MULTI	38	BOOKED	2	PRE LSCS	2	88	130	70	99	anemia	6	0	0	0	4	4	0	4	7	YES	NIL	6	6	DAY 1	2.87	-	7/10,9/10	6	8	15
GIRIJA	34	i16004171	MULTI	38	BOOKED	2	PRE LSCS	1	72	110	70	99	GDM	6	0	0	0	3	4	2	4	6	YES	PPH	5	6	DAY 1	3.09	NICU	8/10,9/10	6	9	12
BANU	24	i16005499	MULTI	38	BOOKED	2	PRE LSCS	2	80	120	70	98	hypo.thy	8	0	0	0	2	4	3	4	7	YES	NIL	4	6	DAY 1	2.89	-	8/10,9/10	7	12	18
DEEPA	22	i16004705	MULTI	37	BOOKED	1	PRE LSCS	2	64	140	70	98	nil	7	0	0	0	4	2	3	4	8	YES	NIL	5	5	DAY1	2.89	-	8/10,9/10	6	13	16
JEEVA	27	i16015468	MULTI	38	BOOKED	2	PRE LSCS	1	90	100	60	99	anemia	5	0	0	0	4	2	3	4	5	YES	NIL	5	6	DAY1	3.39		8/10,9/10	6	12	18
MANOGAR	27	i16015407	MULTI	38	BOOKED	2	PRE LSCS	2	70	110	70	99	rh neg	6	0	0	0	4	2	3	4	6	YES	NIL	4	7	DAY 1	3.3	-	8/10,9/10	6	10	18
GOWRI	39	i16015201	MULTI	37	BOOKED	1	PRE LSCS	1	70	120	60	99	nil	7	0	0	2	2	4	3	4	6	YES	NIL	4	6	DAY 1	2.17	-	8/10,9/10	6	12	18
SUDHA	29	i16014628	MULTI	37	BOOKED	2	PRE LSCS	2	76	120	70	98	anemia	6	0	0	2	4	2	3	4	6	YES	NIL	5	6	DAY 1	2.1	-	8/10,9/10	6	10	16
L.NAYAKI	29	i16016252	MULTI	38	BOOKED	1	PRE LSCS	2	72	110	70	99	nil	6	0	0	2	4	2	4	5	3	YES	NIL	4	6	DAY 1	2.7	-	8/10,9/10	6	12	18
JAYA	25	i16016679	MULTI	37	BOOKED	1	PRE MYO	2	80	120	80	99	nil	6	0	0	3	4	0	3	3	4	YES	NIL	4	6	DAY1	2.74	-	8/10,9/10	7	12	18
M.VIZHI	26	i16017090	MULTI	37	BOOKED	2	PRE LSCS	2	66	110	60	99	hypo.thy	6	0	0	0	3	0	0	3	5	NO	NIL	5	8	DAY 1	3.06	NICU	8/10,9/10	8	12	16
M.PRIYA	24	i16017587	MULTI	38	BOOKED	2	PRE LSCS	2	63	110	60	99	SGA	6	0	0	0	3	3	2	4	5	YES	NIL	5	7	DAY1	2.49	-	8/10,9/10	7	10	20
NASEEMA	22	i16017549	MULTI	38	BOOKED	1	PRE LSCS	2	86	120	70	98	nil	8	0	0	0	2	4	2	5	5	YES	NIL	4	8	DAY1	3.3	-	8/10,9/10	8	12	16
J.PRIYA	33	i16015908	MULTI	38	BOOKED	2	PRE LSCS	2	88	100	60	99	anemia	4	0	0	3	2	3	2	4	4	YES	NIL	4	7	DAY 1	2.7	-	8/10,9/10	7	12	16
V.LAXMI	29	i17014683	MULTI	38	BOOKED	1	PRE LSCS	2	88	110	60	99	GDM	5	0	0	0	4	0	0	4	4	YES	NIL	6	6	DAY 1	2.65	NICU	8/10,9/10	5	10	12
SUDHA	30	i17014745	MULTI	38	BOOKED	1	PRE LSCS	1	65	110	70	98	nil	5	0	0	0	4	0	2	4	4	YES	NIL	5	5	DAY 1	2.9	-	8/10,9/10	6	12	18
ELLAMAL	31	i17015285	MULTI	38	BOOKED	1	PRE LSCS	2	88	120	70	99	nil	6	0	0	0	4	2	3	2	4	YES	NIL	6	6	DAY 1	3.15	-	8/10,9/10	8	12	18
RAMEJA	27	i17017239	MULTI	38	BOOKED	1	PRE LSCS	2	88	110	80	99	sub hypo	9	0	0	0	0	4	2	3	4	YES	NIL	5	7	DAY 1	2.59	-	8/10,9/10	9	15	20
A.FATHIMA	29	i17017222	MULTI	38	BOOKED	2	PRE LSCS	2	92	130	80	99	nil	6	0	0	0	4	0	2	3	4	NO	NIL	4	7	DAY1	2.98	-	8/10,9/10	8	14	20
GEETHA	31	i16021840	MULTI	38	BOOKED	2	PRE LSCS	2	70	100	60	99	sub hypo	6	0	0	2	4	2	4	3	4	YES	NIL	4	6	DAY1	2.69	-	8/10,9/10	8	12	20
D.LAXMI	35	i16021913	MULTI	38	BOOKED	2	PRE LSCS	2	100	110	70	98	nil	6	0	0	2	4	2	4	2	6	YES	NIL	5	6	DAY 1	3	-	8/10,9/10	7	12	16
M.WARI	23	i16022782	MULTI	38	BOOKED	2	PRE LSCS	2	81	110	70	99	nil	6	0	0	2	4	2	2	4	5	YES	NIL	4	6	DAY 1	3.04	-	8/10,9/10	6	12	20
SARANYA	28	i16022233	MULTI	38	BOOKED	2	PRE LSCS	2	77	120	80	99	sub hypo	6	0	0	2	4	0	2	4	5	YES	NIL	5	6	DAY1	3.1	-	8/10,9/10	8	12	24
R.MANI	30	i16027775	MULTI	39	BOOKED	1	PRE LSCS	2	86	110	70	99	nil	6	0	0	2	4	2	3	4	6	YES	NIL	5	6	DAY 1	2.8	-	8/10,9/10	8	12	20
H.AMMA	26	i16029633	MULTI	38	BOOKED	2	PRE LSCS	2	76	110	60	99	nil	6	0	0	0	4	0	0	3	5	YES	NIL	5	6	DAY 1	2.64	-	7/10,8/10	8	14	20
SINDUJA	27	i17008718	MULTI	38	BOOKED	1	PRE LSCS	2	78	110	80	98	iugr	6	0	0	0	3	0	2	3	4	YES	VOMITING	4	6	DAY 1	2.1	NICU	7/10,9/10	7	12	24
V.LAXMI	25	i17009099	MULTI	38	BOOKED	1	PRE LSCS	2	86	120	80	99	anemia	6	0	0	2	5	2	3	3	5	NO	NIL	5	6	DAY 1	3.2	-	8/10,9/10	6	12	20
DIVYA	27	i17005709	MULTI	38	BOOKED	2	PRE LSCS	2	88	130	70	100	sub hypo	4	0	0	3	2	2	2	3	5	NO	NIL	6	6	DAY 1	2.86	-	7/10,9/10	6	10	16
J.SURYA	26	16057529	MULTI	38	BOOKED	1	PRE LSCS	2	78	110	70	98	iugr	4	0	0	3	0	2	3	3	5	NO	NIL	6	6	DAY1	2.73	-	8/10,9/10	6	12	16
KATHIJA	22	i16028158	MULTI	38	BOOKED	1	PRE LSCS	2	86	130	80	99	sub hypo	6	0	0	0	3	0	0	2	4	NO	NIL	5	6	DAY1	2.9	-	8/10,9/10	6	12	17
C.KALA	30	i17010844	MULTI	38	BOOKED	2	PRE LSCS	2	88	120	80	99	oligo	6	0	0	0	4	0	2	2	5	NO	NIL	5	6	DAY 1	2.2	NICU	8/10,9/10	6	12	18
RAHINI	26	i17010376	MULTI	39	BOOKED	1	U.LIE	2	84	110	70	98	sub hypo	4	0	0	0	3	2	0	0	3	4	YES	NIL	4	5	DAY 1	3.92	-	8/10,9/10	6	10	14
P.PONNU	28	i17010976	MULTI	38	BOOKED	1	PRE LSCS	2	76	130	80	99	sub hypo	6	0	0	3	0	0	0	3	6	YES	NIL	4	5	DAY1	3.4	-	8/10,9/10	8	12	16
K.VANI	25	i17010880	PRIMI	37	BOOKED	1	U.LIE	2	80	120	80	98	GDM	4	0	0	0	3	0	0	2	3	6	YES	NIL	5	6	DAY1	2.73	NICU	8/10,9/10	8	12	18
ARTHI	29	i17011752	MULTI	38	BOOKED	1	PRE LSCS	1	88	110	80	99	iugr	6	0	0	0	4	2	3	2	5	NO	NIL	6	6	DAY1	2.15	-	8/10,9/10	6	12	16
ANITHA	32	i17010773	MULTI	37	BOOKED	2	PRE LSCS	2	76	110	80	100	nil	6	0	2	2	4	2	2	3	4	YES	NIL	6	5	DAY1	2.92	-	8/10,9/10	6	12	14
S.ARYA	19	i17019744	MULTI	38	BOOKED	1	BREECH	2	88	110	80	99	sub hypo	8	0	0	2	3	4	2	3	4	YES	VOMITING	7	5	DAY1	2.94	-	8/10,9/10	8	12	16
M.LAXMI	26	i17019733	MULTI	38	BOOKED	1	PRE LSCS	2	90	120	80	100	GDM	6	0	0	2	4	2	3	4	4	YES	NIL	6	5	DAY1	2.73	NICU	8/10,9/10	7	12	16
PARIMALA	35	i17022307	MULTI	37	BOOKED	1	PRE LSCS	2	88	110	70	99	sub hypo	6	0	0	3	4	2	3	4	4	YES	NIL	4	4	DAY1	3.33	-	8/10,9/10	7	14	18
G.DEVI	27	i17022305	MULTI	38	BOOKED	1	PRE LSCS	2	89	110	80	100	GDM	7	0	2	2	4	2	3	3	4	YES	NIL	5	5	DAY1	2.82	NICU	8/10,9/10	6	12	16
NITHYA	28	i17022135	MULTI	38	BOOKED	1	PRE LSCS	2	90	120	80	99	nil	6	0	0	2	4	2	2	3	4	YES	NIL	4	5	DAY1	2.94	-	8/10,9/10	6	12	16
NITHYA	27	i17022796	MULTI	38	BOOKED	2	PRE LSCS	2	75	110	60	100	s.stature	6	0	2	2	4	2	3	4	4	YES	NIL	4	4	DAY1	3.14	-	8/10,9/10	8	14	18
DEVIKA	29	i17022844	PRIMI	38	BOOKED	1	BIG BABY	2	78	110	70	99	GDM	7	0	0	2	3	4	3	3	4	YES	NIL	5	6	DAY1	3.62	-	8/10,9/10	6	10	14
SHARMILA	23	i17024410	PRIMI	38	BOOKED	1	BREECH	1	110	110	70	99	iugr	7	0	0	2	3	3	4	3	4	YES	NIL	5	7	DAY1	2.43	NICU	8/10,9/10	7	12	16
REMALATH	26	i17024674	MULTI	37	BOOKED	1	M.WISH	2	68	110	70	100	GDM	5	0	0	3	4	2	3	4	4	YES	NIL	5	8	DAY1	3.3	NICU	8/10,9/10	7	12	16

NAME	AGE	IP NO	PARITY	GA	B/UB	SURGERY	IND	ASA	PR	SYS BP	DIA BP	SPO2	COMP	VAS 1ST	30 MINS	2 HRS	4 HRS	6 HRS	8 HRS	10 HRS	12 HRS	24 HRS	SEDATION	COMP	B.F DAY 1	W.S DAY 1	AMB DAY1	MILD PAIN	MOD PAIN	SEV PAIN	B.W	NICU	APGAR
REKHA	28	I16012918	PRIMI	38	BOOKED	1	BREECH	2	72	110	70	99	nil	3	0	2	4	2	3	4	4	4	YES	NIL	4	4	DAY1	4	8	16	2.69	-	8/10,9/10
SANGEETA	35	I16018950	MULTI	38	BOOKED	1	PRE LSCS	2	71	110	70	98	nil	3	0	2	4	2	2	4	3	4	YES	NIL	4	4	DAY 1	6	8	18	3.01	-	8/10,9/10
KALPANA	36	I16018991	MULTI	38	BOOKED	2	PRE LSCS	2	84	110	70	99	nil	3	0	0	4	2	3	2	4	4	YES	NIL	3	4	DAY1	4	6	16	3.11	-	8/10,9/10
M.VALLI	28	I16020451	MULTI	37	BOOKED	2	PRE LSCS	2	90	110	60	98	nil	2	2	3	2	3	2	4	4	5	YES	NIL	3	3	DAY1	3	6	10	3.05	-	8/10,9/10
SASIKALA	29	I16020709	MULTI	37	BOOKED	1	PRE LSCS	1	90	110	70	99	nil	3	0	2	4	2	3	4	3	4	YES	NIL	4	6	DAY1	5	10	16	2.8	-	8/10,9/10
M.WARI	29	I16012375	MULTI	38	BOOKED	2	PRE LSCS	2	80	120	70	99	nil	4	0	2	5	2	3	2	4	4	YES	NIL	4	5	DAY1	6	10	18	3.36	-	8/10,9/10
V.LAXMI	38	I16011599	MULTI	39	BOOKED	1	PRE LSCS	1	80	100	60	99	nil	3	0	2	4	3	4	2	4	5	YES	NIL	3	4	DAY1	4	8	12	3	-	8/10,9/10
S.RANI	36	I16017607	MULTI	38	BOOKED	2	PRE LSCS	2	110	120	80	99	GDM	4	0	2	5	3	3	4	3	4	YES	NIL	4	4	DAY1	5	8	14	3.19	NICU	8/10,9/10
KOKILA	24	I16017710	MULTI	38	BOOKED	1	PRE LSCS	1	88	110	60	98	anemia	3	0	2	4	3	3	4	4	4	YES	NIL	4	5	DAY1	4	7	12	3.37	-	8/10,9/10
V.MATI	36	I16018191	MULTI	38	BOOKED	1	PRE LSCS	2	80	100	6	99	nil	3	0	2	5	2	3	4	4	5	YES	NIL	3	4	DAY1	4	6	10	2.87		8/10,9/10
JYOTHI	28	I16013340	MULTI	38	BOOKED	1	PRE LSCS	2	74	110	70	99	sub hypo	3	0	3	4	2	2	4	4	5	YES	NIL	4	5	DAY1	5	10	16	2.8		8/10,9/10
MINIMOL	32	I16005300	MULTI	38	BOOKED	2	PRE LSCS	2	80	140	90	98	GES HYP	3	0	2	5	3	3	4	4	5	YES	NIL	3	4	DAY 2	4	8	12	4.1		7/10,8/10
MUBINA	26	I16005368	MULTI	38	BOOKED	1	PRE LSCS	1	88	120	70	99	nil	2	0	3	4	2	3	4	4	5	YES	VOMITING	4	4	DAY1	5	8	12	2.78		8/10,9/10
KIRTHIKA	29	I16006684	MULTI	39	BOOKED	1	CPD	2	90	110	80	98	sub hypo	2	0	3	3	2	4	3	4	5	YES	NIL	3	2	DAY1	4	8	10	3.58		8/10,9/10
SASAIKALA	29	I16020709	MULTI	38	BOOKED	1	PRE LSCS	1	90	110	70	99	nil	2	0	4	3	4	5	2	4	5	YES	NIL	3	3	DAY1	3	6	10	2.8		8/10,9/10
K.DEVI	24	I16036471	PRIMI	39	BOOKED	1	BREECH	2	76	120	70	99	nil	2	0	4	2	4	2	3	4	6	YES	NIL	4	5	DAY1	5	8	12	3.5		8/10,9/10
SHANTI	25	I16036299	MULTI	37	BOOKED	1	BREECH	2	70	110	70	98	BOH	3	0	2	4	2	3	4	5	5	YES	NIL	4	4	DAY1	4	6	10	2.95		8/10,9/10
PREETHI	37	I16034958	MULTI	37	BOOKED	2	PRE LSCS	2	83	110	60	99	sub hypo	3	0	3	4	2	4	4	5	5	YES	NIL	3	5	DAY1	4	6	10	3.7		8/10,9/10
GEETHA	37	I16034962	PRIMI	39	BOOKED	1	M.WISH	2	84	100	60	98	sub hypo	2	0	3	3	4	4	4	5	5	YES	NIL	3	4	DAY1	3	6	10	3.08		8/10,9/10
DHARANI	21	I16034442	PRIMI	38	BOOKED	1	BREECH	2	70	120	80	99	nil	3	0	2	4	3	2	3	4	4	YES	NIL	4	4	DAY1	4	8	12	3.21		8/10,9/10
B.WARI	31	I16033622	MULTI	38	BOOKED	2	PRE LSCS	2	100	110	70	100	nil	2	0	3	4	2	4	3	4	5	YES	NIL	3	5	DAY1	4	6	10	2.6		8/10,9/10
T.VATHY	27	I16021322	MULTI	38	BOOKED	2	PRE LSCS	1	110	120	70	99	nil	3	0	3	4	2	5	2	5	6	YES	NIL	3	4	DAY1	4	6	8	2.7	-	8/10,9/10
PAVITHRA	29	i16022539	MULTI	37	BOOKED	1	PRE LSCS	2	92	120	60	100	poly	3	0	3	4	2	2	4	4	5	YES	NIL	4	5	DAY1	5	10	12	2.6	NICU	8/10,9/10
SARANYA	30	I16022008	MULTI	38	BOOKED	2	PRE LSCS	1	72	110	70	100	nil	2	0	3	4	2	3	2	4	4	YES	NIL	4	4	DAY1	5	10	12	3.9	NICU	8/10,9/10
M.SATHYA	27	I16021691	MULTI	38	BOOKED	1	PRE LSCS	2	83	110	70	99	nil	3	0	2	4	2	4	3	5	5	YES	NIL	3	4	DAY1	4	8	10	3.04	-	8/10,9/10
VASANTHI	29	I16023332	MULTI	36	BOOKED	2	PRE LSCS	2	88	120	80	99	I OBESITY	2	0	4	2	3	3	3	4	6	YES	NIL	4	5	DAY1	5	10	12	3.2	NICU	8/10,9/10
M.WARI	23	I16022782	MULTI	38	BOOKED	2	PRE LSCS	2	88	140	80	98	nil	3	0	3	4	2	2	4	4	5	YES	NIL	3	4	DAY1	4	6	10	3.04	-	8/10,9/10
K.DEVI	22	I16040216	PRIMI	39	BOOKED	1	P.PREVIA 2	2	99	110	80	99	p.previa	3	0	3	4	2	2	4	4	5	YES	NIL	4	5	DAY1	5	10	12	2.83	-	8/10,9/10
DHILSATH	30	I16027832	MULTI	37	BOOKED	2	PRE LSCS	2	110	110	70	98	nil	2	0	4	3	2	4	2	4	4	YES	NIL	3	4	DAY1	4	8	10	2.8	-	8/10,9/10
YAMUNA	30	I16027871	MULTI	38	BOOKED	2	PRE LSCS	2	76	110	70	99	nil	2	0	4	3	4	2	3	4	5	YES	NIL	4	5	DAY1	5	8	10	2.9	-	8/10,9/10
REVATHI	29	I16027895	MULTI	37	BOOKED	2	PRE LSCS	2	96	100	70	98	GDM	3	0	2	4	2	3	4	4	4	YES	NIL	4	5	DAY1	4	6	10	3.8	NICU	8/10,9/10
SUDHA	30	I16027830	MULTI	38	BOOKED	2	PRE LSCS	2	76	100	60	99	nil	2	0	4	2	4	2	3	4	5	YES	NIL	4	4	DAY1	4	7	10	2.8	-	7/10,9/10
L.KANI	29	I16027426	MULTI	37	BOOKED	1	BREECH	2	76	120	60	99	nil	2	0	4	2	4	2	3	4	4	YES	NIL	4	4	DAY1	4	8	10	2.9	-	8/10,9/10
SUBHA	25	I16027521	MULTI	38	BOOKED	2	PRE LSCS	1	72	110	70	99	nil	3	0	3	4	2	3	4	5	4	YES	NIL	4	5	DAY1	5	8	11	2.9	-	7/10,9/10
D.MALINI	30	I16027718	MULTI	38	BOOKED	2	PRE LSCS	1	80	110	70	100	nil	2	0	4	2	3	4	3	4	4	YES	NIL	5	5	DAY1	4	8	10	2.8	-	7/10,9/10
BHARATHI	34	I16027595	MULTI	39	BOOKED	2	PRE LSCS	2	82	110	60	100	GDM	3	0	3	4	2	4	3	5	5	YES	NIL	4	5	DAY1	4	8	10	2.7	-	8/10,9/10
R.WARI	27	I16027587	MULTI	38	BOOKED	2	PRE LSCS	1	72	100	60	99	nil	3	0	3	4	2	5	4	4	6	YES	NIL	4	5	DAY1	5	8	10	3.05	-	8/10,9/10
A.VENI	27	I16038904	MULTI	36	BOOKED	2	PRE LSCS	2	101	110	70	100	oligo	3	0	3	4	2	4	4	6	5	YES	NIL	3	5	DAY1	4	8	10	2.4	NICU	8/10,9/10
RADHIKA	28	I16021982	MULTI	38	BOOKED	2	PRE LSCS	2	70	110	70	99	nil	2	0	4	3	3	4	4	4	6	YES	NIL	4	6	DAY1	4	6	10	2.75	-	8/10,9/10
D.RANI	23	I16021955	MULTI	38	BOOKED	1	PRE LSCS	2	82	100	60	100	nil	3	0	3	4	2	4	4	4	5	YES	NIL	4	5	DAY1	4	6	8	2.21	-	8/10,9/10
SINDHU	28	I16020972	MULTI	38	BOOKED	1	PRE LSCS	2	80	90	60	99	nil	3	0	3	4	2	5	4	4	5	YES	VOMITING	3	4	DAY1	4	7	10	2.93	-	8/10,9/10
DIVYA	33	I17006845	MULTI	38	BOOKED	2	PRE LSCS	2	88	120	80	99	rh neg	2	0	4	3	4	4	3	4	6	YES	NIL	3	4	DAY1	3	6	8	2.96	-	8/10,9/10
G.SUTHA	31	I17003256	MULTI	38	BOOKED	2	PRE LSCS	1	74	110	70	100	nil	3	0	3	5	3	4	4	5	6	YES	NIL	4	5	DAY1	4	6	10	2.7	-	8/10,9/10
LAVANYA	25	I17001410	PRIMI	39	BOOKED	1	BREECH	2	88	120	70	99	nil	2	0	4	3	4	4	5	4	5	YES	NIL	3	3	DAY1	3	5	8	3.04	-	8/10,9/10
T.RANJU	26	I17001505	PRIMI	38	BOOKED	1	BREECH	2	92	130	80	99	sub hypo	3	0	3	4	3	5	4	4	5	YES	NIL	4	3	DAY1	4	6	8	2.78	-	8/10,9/10
M.DEVI	30	I17000983	MULTI	38	BOOKED	1	PRE LSCS	2	80	110	80	100	nil	3	0	3	5	3	3	4	4	5	YES	NIL	4	4	DAY1	5	8	10	3.26	-	8/10,9/10
BHARATHI	28	I17000623	PRIMI	40	BOOKED	1	CPD	2	85	110	60	100	nil	3	0	3	4	3	4	4	5	5	YES	NIL	3	4	DAY1	4	6	8	3.14	-	8/10,9/10
NANDINI	24	I17007659	MULTI	38	BOOKED	1	PRE LSCS	2	88	120	80	99	rh neg	2	0	4	3	4	4	3	4	5	YES	NIL	4	4	DAY1	4	6	10	3.02	-	7/10,9/10
NDUMATH	30	I17007931	PRIMI	37	BOOKED	1	PRE MYO	2	80	120	80	99	GDM	2	0	4	3	3	5	4	4	5	YES	NIL	3	3	DAY1	4	6	8	3.52	NICU	7/10,8/10
SINDUJA	27	I17009093	PRIMI	38	BOOKED	1	BREECH	2	104	110	80	99	iugr	3	0	3	4	3	4	4	5	5	YES	NIL	4	4	DAY1	5	8	10	2.52	-	8/10,9/10
N.KALYANI	26	I17010024	MULTI	38	BOOKED	2	PRE LSCS	2	98	120	70	100	nil	3	0	2	4	2	4	3	4	5	YES	NIL	4	4	DAY1	4	6	12	3.27	-	8/10,9/10
KASTHURI	26	I17009939	MULTI	38	BOOKED	1	PRE LSCS	2	74	110	70	100	GGI	3	0	3	4	2	4	3	5	5	YES	NIL	4	4	DAY1	5	10	14	3.07	NICU	8/10,9/10
S.WATHI	32	I17009849	MULTI	38	BOOKED	2	PRE LSCS	2	98	110	70	99	sub hypo	2	0	3	4	2	4	4	3	4	YES	NIL	3	3	DAY1	4	6	8	2.55	-	8/10,9/10
T.PRIYA	27	I17011782	MULTI	37	BOOKED	2	PRE LSCS	2	84	110	60	100	rh neg	3	0	3	4	2	4	3	3	4	YES	NIL	4	4	DAY1	5	10	14	3.12	-	8/10,9/10
AKILA	27	I17011245	MULTI	37	BOOKED	2	PRE LSCS	2	86	110	70	99	nil	2	0	4	4	3	4	4	3	4	YES	NIL	4	4	DAY1	4	8	10	3.31	-	8/10,9/10
NITHYA	34	I17011576	MULTI	38	BOOKED	2	PRE LSCS	2	80	100	50	99	nil	3	0	3	4	3	3	3	4	4	YES	VOMITING	4	3	DAY1	5	8	12	2.79	-	8/10,9/10
MEENA	31	I17010786	MULTI	37	BOOKED	2	PRE LSCS	2	96	130	80	100	GDM	2	0	4	4	2	3	4	3	4	YES	NIL	3	3	DAY1	4	8	10	2.73	NICU	8/10,9/10
R.JEELA	28	I17014862	MULTI	39	BOOKED	1	PRE LSCS	2	66	100	60	100	nil	2	0	4	3	4	2	4	4	5	YES	NIL	3	4	DAY1	4	6	10	3.09	-	8/10,9/10
ARIFA	25	I17014883	MULTI	37	BOOKED	2	PRE LSCS	2	99	110	60	99	nil	3	0	3	4	2	4	3	4	6	YES	NIL	4	4	DAY1	5	8	12	2.83	-	8/10,9/10
KAVITHA	31	I17014018	MULTI	38	BOOKED	2	PRE LSCS	2	80	110	70	100	nil	3	0	3	4	3	4	2	5	6	YES	NIL	4	4	DAY1	4	8	10	2.91	-	8/10,9/10
SATHIYA	29	I17013290	MULTI	37	BOOKED	2	PRE LSCS	2	88	110	80	99	GGI	3	0	3	4	3	4	3	4	5	YES	NIL	3	4	DAY1	5	8	12	3.39	NICU	8/10,9/10
V.KARTHIKA	30	I17013884	MULTI	38	BOOKED	2	PRE LSCS	1	66	90	60	100	GDM	4	0	4	3	4	2	3	4	5	YES	NIL	3	4	DAY1	3	6	10	3.8	NICU	8/10,9/10
REKHA	31	I17016075	MULTI	38	BOOKED	1	PRE LSCS	2	80	110	60	99	nil	3	0	3	4	2	4	3	3	4	YES	NIL	4	4	DAY1	4	8	12	3.17	-	8/10,9/10
ARTHI	27	I17015882	MULTI	37	BOOKED	2	PRE LSCS	2	72	110	60	99	nil	2	0	4	3	4	2	4	3	5	YES	NIL	3	4	DAY1	5	8	12	3.62	-	8/10,9/10
MEERA	30	I17016481	MULTI	39	BOOKED	1	PRE LSCS	1	60	110	70	100	nil	2	0	4	3	4	2	4	3	5	YES	NIL	3	4	DAY1	4	6	8	3.27	-	8/10,9/10
M.SELVAM	26	I17016076	MULTI	38	BOOKED	2	PRE LSCS	2	80	100	60	100	sub hypo	2	0	4	2	3	4	3	4	4	YES	NIL	4	4	DAY1	4	6	10	2.95	-	8/10,9/10
LATHA	29	I17016792	MULTI	37	BOOKED	2	PRE LSCS	1	68	110	70	100	nil	3	0	3	4	2	3	4	4	5	YES	NIL	4	4	DAY1	5	8	12	2.59	-	8/10,9/10
P.VASUKI	39	I17017042	MULTI	39	BOOKED	2	U.LIE	2	86	110	70	98	GGI	2	0	4	3	4	3	4	4	5	YES	NIL	4	4	DAY1	5	8	12	3.11	-	8/10,9/10
M.DEVI	30	I17000983	MULTI	38	BOOKED	1	PRE LSCS	2	80	110	80	98	nil	3	0	3	4	2	4	3	4	5	YES	MSL	4	4	DAY1	4	6	12	3.26	-	8/10,9/10
PRATHIMA	33	I17023118	MULTI	38	BOOKED	1	PRE LSCS	2	64	100	60	100	sub hypo	3	0	2	4	3	4	3	4	4	YES	PPH	3	3	DAY1	5	8	12	3	-	8/10,9/10
VANITHA	36	I17019955	MULTI	38	BOOKED	2	PRE LSCS	2	74	110	70	100	GDM	3	0	3	4	3	3	4	4	5	YES	NIL	4	4	DAY1	5	8	12	2.99	NICU	8/10,9/10
V.LAXMI	23	I17020485	PRIMI	38	BOOKED	1	BREECH	2	62	130	70	99	sub hypo	3	0	2	3	4	3	3	4	4	YES	NIL	4	5	DAY1	4	10	14	3.37	-	2/10,8/10
RUBY	32	I17020573	MULTI	37	BOOKED	1	PRE LSCS	2	68	100	70	100	nil	4	0	2	2	4	2	4	3	4	YES	NIL	5	6	DAY1	5	12	14	3.26	-	8/10,9/10
GEETHA	30	I17022586	MULTI	38	BOOKED	1	PRE LSCS	2	74	120	80	100	nil	3	0	3	4	2	4	3	4	4	YES	NIL	4	4	DAY1	5	10	14	3.02	-	8/10,9/10
SATHYA	20	I17021365	MULTI	37	BOOKED	1	BREECH	2	88	100	80	99	sub hypo	2	0	4	3	3	4	3	4	4	YES	NIL	3	4	DAY1	4	10	12	2.62	-	7/10,8/10
V.WARI	28	I17021545	MULTI	37	BOOKED	1	CPD	2	82	120	80	100	overt DM	4	0	2	3	4	3	4	3	4	YES	NIL	4	4	DAY1	5	10	14	3.59	NICU	8/10,9/10
M.LAXMI	30	I17024031	MULTI	38	BOOKED	2	PRE LSCS	2	89	110	70	99	anemia	3	0	3	4	2	4	3	4	4	YES	NIL	4	4	DAY1	4	8	12	3.45	-	7/10,8/10
KARPAGAM	27	I17023793	MULTI	37	BOOKED	2	PRE LSCS	2	58	110	70	100	anemia	3	0	2	4	2	4	3	3	4	YES	NIL	3	4	DAY1	6	12	14	2.89	-	7/10,9/10
M.MANI	30	I17025826	MULTI	38	BOOKED	2	PRE LSCS	2	60	120	70	99	sub hypo	3	0	2	4	3	4	3	4	4	YES	NIL	4	4	DAY1	5	10	14	3.03	-	6/10,8/10
FASILA	20	I17031948	MULTI	38	BOOKED	1	PRE LSCS	2	80	120	89	99	nil	3	0	2	4	3	4	5	3	4	YES	NIL	3	4	DAY1	4	8	12	2.62	-	8/10,9/10